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ABSTRACT

The University of California, its campuses, and their individual schools and departments of education have substantial responsibilities for providing research, training, service, and leadership in the field of education. The responsibilities of the units differ. As yet, however, none is fully meeting its obligations to improve education. Part I of this report describes missions it is believed the University of California's schools of education should pursue, including: (1) professional training (teacher education and advanced professional training); (2) advancement of knowledge and training of scholars; (3) service to the field and coordination with institutions; and (4) advocacy of the improvement of education. Also discussed in part I are the changes the University and the campus administrations must make for the University to assume leadership in the reform of public education. Part II of this report describes what the missions of the School of Education at Berkeley should be, their current efforts and plans, and the additional resources and other changes that must be obtained if the university is to achieve its objectives. References, tables, and reviews of school of education faculty personnel are appended. (JMK)

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THE GOOD SCHOOL OF EDUCATION
LINKING KNOWLEDGE,
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SP 024 473

THE GOOD SCHOOL OF EDUCATION:
LINKING KNOWLEDGE, TEACHING AND LEARNING

A REPORT PREPARED FOR

THE EDUCATION REVIEW COMMITTEE
UNIVERSITY OF CALIFORNIA
SYSTEMWIDE ADMINISTRATION

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SCHOOL OF EDUCATION
OFFICE OF THE DEAN

BERKELEY, CALIFORNIA 94720

February 23, 1984
Revised: March 26, 1984

Professor John Goodlad, Chair
Education Review Committee
c/o Office of the Associate Vice President
for Academic Affairs
Systemwide Administration
University of California
Berkeley, CA 94720

Dear Professor Goodlad,

I want to thank you and your colleagues on the Education Review Committee for accepting President Gardner's and Academic Senate Chair Professor Ralph Turner's charge to conduct a comprehensive review of the University's contributions -- current and prospective -- in the field of Education, particularly contributions to the elementary and secondary schools. I do not underestimate the degree of difficulty your Committee faces in trying to assess the University's role and responsibility in regard to "the deteriorated state of our schools and of the teaching profession". Your task is as formidable as it is crucial to the future of quality public education in California.

I use the word formidable because a reading of the Committee's charter makes it clear that you and your colleagues have been asked to conduct a review of the University's efforts in the area of education -- particularly the programs and activities of the University's schools of education and teacher education programs -- far more serious and wide-ranging than any prior effort. As I understand your assignment, the Committee has been asked to extend its investigation beyond mere obstacle recognition, that is, the compilation of exhaustive lists of reasons "explaining" why the University's academic and professional programs in Education always appear to fall short of expectations and of what obstacles need to be overcome for the University's efforts in Education to be judged successful by the greater University community.

Rather, the Committee's Charter requires that it consciously and conscientiously think about what policies it can offer which will result in the University's investment in educational studies yielding maximum benefits to the scholarly community, the University generally, the educational community and, last but most important, the four million pupils attending California's public elementary and secondary schools.

In addition to the word formidable, I also use the word crucial in describing your task because I am convinced that the nation's and California's schools cannot and will not be improved unless the University of California and other major research universities play more active roles in the formulation, implementation and evaluation of renewal and reform measures. An illustration of this point may be useful.

One major area of needed reform is mathematics and science education. In this area the University has already made a substantial contribution by developing a comprehensive and coherent description cf fundamental competencies in mathematics expected of University-bound students. The Statement on Competencies in English and Mathematics Expected of Entering Freshman, issued in November 1982 by the Academic Senate of the University of California, in conjunction with the Academic Senates of the California State University and the California Community Colleges, represents a landmark undertaking. However, even more needs to be done in the area of mathematics education. The University should also be aware of, and be prepared to offer remedies for, the looming shortages in qualified mathematics and science teachers. These shortages threaten to make a mockery of the University's efforts to establish new admission standards.

Having decided that three years of mathematics and two years of laboratory science are prerequisites for admission to the University, the University faculty must assume some responsibility for closing the widening gap between the demand and the supply of junior high and high school mathematics and science teachers. If the schools are to successfully bear the complex and burdensome demands we have placed on them, then the University will have to assume responsibility for harmonizing its calls for school reform with its own priorities in educational studies. Surely it is insincere, at best, to lament the quality of instruction in elementary and secondary school mathematics, while raising no questions about recent actions taken by a number of University Departments of Mathematics to eliminate courses in mathematics for prospective secondary school teachers of mathematics. At the very least, the University must be aware of the resource costs and consequences of its demands for school improvement and curriculum reform.

To put it more bluntly: the University must be prepared to go beyond gestures; it must be prepared to lead school reform efforts. This can be done by creating an environment where all faculty are encouraged to think more systematically about the relationship among knowledge creation, teaching (knowledge transmission) and learning (knowledge acquisition). This can be done by creating a climate where well-developed statements about expected academic competencies for University-bound students are matched by thoughtful examinations of the institutional, social and economic impediments that stand between expectation and reality. This can be done by supporting deliberate attempts to improve educational practice by fostering a climate that encourages problem-sensitive research in areas that are likely to yield new knowledge about the teaching and learning process. Above all else, the University can serve its own interest, the interests of University-bound students and the interests of teachers and educational administrators by committing itself to doing whatever is required to develop first-rate schools of education and outstanding teacher education programs: academic units in the University where coherent and systematic research on the relationship between theory and educational practice is conducted, is supported and is valued.

I offer some suggestions on how the University can support school reform efforts in the attached paper, The Good School of Education: Linking Knowledge, Teaching and Learning. In preparing the paper, I tried to stick closely to the questions posed in the Committee's Charter. However, after completing the paper, I felt I had not addressed one underlying issue which I would like to take up here.

I found myself wondering: "why are we still struggling to define a proper role for schools of education and teacher education programs in the University of California?" After all, only eight years have elapsed since the completion of The Study of Education: A Review of the Education Programs in the University of California (July 1976), issued by the Academic Planning and Program Review Board (APPRB), under the chairmanship of Professor Earl F. Cheit. The Study of Education ("the Cheit Report") was comprehensive and judicious. The observations and recommendations made in the Cheit Report were later confirmed by another review committee, The Report of the Commission on Education (May 1981), issued by the (Berkeley) Commission on Education, chaired by Professor Neil J. Smelser. Why not simply review the findings of the Cheit and Smelser Reports, find out what was done to implement their recommendations, supplement these efforts with a review of the literature and be done with it? Let me venture an answer. I believe we are still attempting to define the University's proper role and mission in Education because we have yet to address and remedy a fundamental issue the reports raised. This is a large claim -- one that rubs raw my own sense of civility. Still, I believe it to be accurate. Permit me to elaborate.

Education: Marginal Citizen in the University

The Cheit Committee was convened, in part, because it was felt that the sharp decline in demand for graduates of all teacher training programs, coupled with rising inflation and constrained budgets, made it imperative for the University to rationalize its efforts in Education. The Smelser Committee was convened because it was believed that Berkeley's School of Education had not adequately responded to the sharp decline in demand for professional educators and, therefore, was without focus, adrift and in serious need of revamping. Both reports discuss the barriers blocking full acceptance of educational programs by the larger University community. Both reports acknowledge the marginality of schools of education within the University of California. Both reports attribute education's marginality to: 1) the low status of elementary and secondary school teaching; 2) education's half-way house status as a derivative or para-discipline, dependent upon the traditional disciplines for its intellectual ballast; 3) the reluctance of academics from the recognized disciplines to be associated with education programs; 4) the control over academic programs in education exercised by external agencies, resulting in the stifling of curriculum diversity and innovation and the diminishment of the academic authority of Education faculty; 5) the difficulties inherent in all multi-disciplinary research efforts, especially problem-sensitive applied research; and 6) the fierce competition for limited resources.

One cannot read the Cheit and Smelser Reports without confronting the general structural problems that professional schools face on campuses dominated by the arts and sciences ethos and the unique organizational pathologies that afflict schools of education in major research universities. It is clear that both sets of reviewers felt compelled to examine the root causes of Education's state of "congenital prestige deprivation," the most serious affliction that can beset any academic unit in the modern research university. However, both reports give the impression that the obstacles that bar schools of education from becoming full and equal members of the University community are immovable and that little can be done about them except to acknowledge their existence. Thus, while excellent in describing obstacles, both reports are comparatively silent when it comes to instructing us on how to remove these obstacles.

One observation in the Smelser Report exemplifies this line of analysis. After listing the obstacles that stood between Berkeley's School of Education and full acceptance by the wider Berkeley community, the report noted that "even in those cases where schools of Education have lifted themselves to national and international prominence as Education schools (for example, Harvard, Stanford), they have been unable wholly to shed reputations of low standing on their own campuses, certainly in relation to academic departments in the arts and sciences and in relation to most other professional schools. The attitudes and evaluations of society's larger stratification system appear inevitably to be reproduced in microcosm in the University setting" (p. 8). In other words, being good and doing well are not enough. By definition, the good school of education must take a back seat to virtually any second-rate traditional academic department.

In making these observations about the Cheit and Smelser Reports, I risk doing them an injustice by reducing their findings to a discussion about obstacles. I do not mean to put forth such a reductio ad absurdum. I have learned too much from these reports to think them one-dimensional. Nevertheless, I contend that they failed to address the issue of what the University can and must do to remove the obstacles which bar schools of education from being accepted as full partners in the University.

Obstacle Removal: The New Agenda

So, what is to be done? A good place to start would be for the University's administrative leadership and the faculty to challenge the widely held views in the University that elementary and secondary school teaching is an inferior occupation, for inferior students; that skilled teaching is the product of art and craft and cannot be taught or learned; and that skillful use of knowledge is automatic, requiring little analysis and even less concern about how problem-sensitive research on teaching and learning can improve pedagogical practice. Unless these conventional attitudes about teaching are challenged, good students will not go into teaching. Unless good students go into teaching, real school reform is doomed before it gets off the ground.

A recent study by Le Monde ranked French universities on the basis of the quality of their preparation of secondary school teachers. That such a ranking of universities in the United States is impossible to conceive of is symptomatic of the gap that separates schools and the University. Until the University's leadership encourages its talented graduates to consider teaching, even if but for a few years, the gap between what we expect of our public schools and what we will receive will only grow wider (see Table 1). Without affirmative action, the calls for reform by University-based school reformers will amount to loud but inert thunder or, as my Latin teacher would put it, brutum fulmen. Still, hope springs eternal in the heart of this reformer. Would it not be wonderful if universities in the United States competed with each other to educate the best scholar-practitioners in education?

Second, the University's leadership should also challenge both the view that a second-rate department in a traditional discipline is, ipso facto, superior to any school of education and the view that the goals and objectives of major research universities preclude a real commitment to build first-rate programs in Education. At the very least, this corrective action would enable schools of education to increase their level of interaction with the rest of the University community. At best, it would create a climate which would encourage the entire University community to become the locus for studies in education.

A third task for the University's leadership is removal of obstacles to the promotion of experimentation in teacher training programs. Schools of education within the University are being severely handicapped by a teacher licensing system that is archaic, stubborn and, in many instances, counterproductive. Should the University's leadership forcefully petition for greater flexibility in the training and licensing of teachers, the current keepers of the regulatory structure would probably offer little resistance. Failing this, it is likely that universities will, instead, find that pressures to "reform" teacher education reduce still further the influence of higher education institutions, in favor of apprenticeship models favored by constituencies hostile to universities.

These recommendations are not put forth as dictates, but are meant to be illustrative. Their point is this: if the Education Review Committee's effort is to amount to more than yet another explication of the organizational consequences of the low prestige of the teaching profession, then the Committee must urge the University to challenge the status quo. The Committee must challenge the conventional wisdom about teaching: that education is a profession whose low status and poor image are well deserved, immutable and of no consequence to the University. The Committee must raise questions about the legitimacy of reflexively consigning education and teacher education programs to second-class citizenship. How can we in the University claim to be assisting in the revitalization of elementary and secondary education, renewing the morale, skills, status and self-confidence of the state's public school teachers, when, by word and deed, we tell teachers that, no matter what their individual levels of skill and competence, they are part of an enterprise whose intellectual deficiencies are not only structural, but contagious?

The Good School of Education

So far I have dwelt on the negative perceptions to be overcome. Now I would like to make a case for building the "good" school of education. My thesis is straightforward: if reviews of schools of education are to become more than periodic exercises in obstacle recognition, the task of obstacle removal must begin; a new frame of reference for University involvement in Education must be utilized. I would suggest that this new frame of reference begin with the assumption that the good school of education is uniquely positioned to link research knowledge from many disciplines with educational practice and, moreover, that infusing practice with knowledge is a desirable and necessary outcome.

Too many students come out of high schools deficient in language and literacy skills -- unable to concentrate or to sustain an extended line of thought in reading and writing, incapable of analytical and synthetic reasoning, deficient in connecting the concrete with the abstract. They cannot differentiate the personal from the impersonal and the literal from the figurative. They cannot perceive irony, ambiguity and multiple points of view; they do not recognize which social and moral perceptions are egocentric, ethnocentric, absolutist and authoritarian. Such deficiencies are not, and will not, be addressed by traditional academic departments of English. The study of literacy would have to include, at the very least, current research findings in cognitive psychology, anthropology, psycholinguistics, sociolinguistics, logic, rhetoric, general semantics, communications theory and artificial intelligence systems. The only arena where experts in these fields do come together to examine systematically the problems of literacy is in the good school of education.

A second and related issue that requires a multi-disciplinary approach is the area of civics, or citizenship education. California is in the middle of a tide of demographic change destined to alter fundamentally all of our conventional definitions of civic and political life. The early stages of this revolution are now being felt in the state's public schools. Audited enrollment data for the 1981-82 school year show that more than one-half of the state's kindergarten through second grade population are members of a minority group: one-third of the total pupils in this grade bracket are Hispanic, approximately one-tenth are Black, and nearly one-twelfth are Asian or Pacific Islanders. By academic year 1997-1998, more than one-half of the state's high school seniors will be non-White (see Tables 2 and 3).

Given these demographic shifts, California's polity will become either what Theodore H. White calls "a fissiparous coalition of many minorities," or we will become a society where racial, ethnic and life-style differences are valued, rather than serving as excuses for unlimited factionalism and mindless tribal political warfare. Which of these futures we will inherit depends, to a great extent, on the quality of instruction we provide to our elementary and secondary school pupils in the areas of history, civics, government and social studies. Effective citizenship in a democracy rests on a vigorous and viable system of civic education that teaches citizens-in-training to appreciate the balance between civic rights and civic obligations. The only arena where experts from the disciplines of history, political science, economics, geography, sociology, developmental psychology and instructional psychology do come together to examine the problem of providing effective citizenship education for the state's and the nation's elementary and secondary school pupils is in the good school of education.

A third example of the role that the good school of education can play is the task of developing a better understanding of the potential impact that technology will have on instruction, especially in the development of computer-based interactive intelligent tutoring systems. Here again, schools of education are the only place in the University where scholars from diverse areas, including computer science, artificial intelligence, mathematics, instructional psychology, cognitive science and educational psychology can come together to conduct research and foster development on this issue.

In short, many of the issues faced by elementary and secondary education do not fall within the exclusive domain of single academic disciplines. Good schools of education recognize this and are organized accordingly. Good schools of education must be able to mobilize the highest intellectual skills of faculty trained in a wide range of disciplines, from computer science to anthropology, from political science to linguistics.

It does not follow that the good school of education must be organized among lines that ignore the knowledge bases, unique methodologies and other strengths of traditional academic disciplines. On the contrary, discipline-oriented faculty groupings are the best means for recruiting, evaluating and encouraging high-quality research. However, practice-sensitive research is likely to have a greater impact if it is conducted by teams comprising individuals from several disciplines. This approach -- interdisciplinary research teams of discipline-oriented faculty -- is essential to the success of the good school of education.

However, what is appropriate for the good school of education is not thought to be good for the great university. Neither interdisciplinary research nor practice-sensitive research is valued highly by the prevailing norms of the University. As a result, a rather perverse incentive structure has been created. Education faculty are discouraged from pursuing research that has the greatest potential for optimizing both knowledge creation and practice improvement, the raison d'etre of a professional school.

The Case Against Formal Programs in Educational Studies

Now, of course, my notion of the support the University should give to scholarly programs in Education is not shared by a significant proportion of the University community. At the risk of oversimplifying the arguments against creating a climate which would foster the development of "the good school of education", permit me to list some assumptions, which I believe are shared by many of those who wish the University could abandon scholarly programs in education: 1) teaching is an act that requires no professional skills; 2) nothing is presently being discovered about processes of teaching and learning that is worth communicating to those intending to become teachers; 3) any important new knowledge about teaching can reasonably be conveyed to teachers already in the classroom by the popular media; and 4) by their own means teachers are able to keep in touch with new developments in their disciplines once they have graduated from their disciplines. To these widely held, though rarely articulated, assumptions about teacher education could be added a few more about the educational process: 1) textbooks are an adequate foundation for classroom education; 2) schools are well organized and well understood social structures; and 3) the school change process is well understood and can be easily understood by anyone with a good mind who is prepared to invest a few months investigating the subject of education, schools and schooling.

If one accepts these popular assumptions, then the University should close down all of its efforts in education. There would be no sense in developing the learning sciences, because teaching is a natural act. The University of California, along with other major research universities, would continue to create new knowledge in, say, physics, and those portions of that new knowledge that are appropriate to the elementary and secondary school curriculum would seep into the schools easily and automatically.

I submit that each of the assumptions of the paragraph above is incorrect. The revitalization of American education, which is the most challenging task facing this country for the rest of the century, depends fundamentally on the acceptance of a new professional responsibility for education by major research universities.

The question we must all ultimately answer is this: "How much longer can we tolerate the status quo in the University and in the schools?" To me the answer is obvious: "Not much longer."

Here again, the Smelser Report conveys a useful lesson: "from time to time during our work we experienced a certain sense of hopelessness, based on the observation that the School's problems are so numerous, so enduring, and apparently so intractable that little if not nothing can be done to break into and reverse that family of vicious circles that has entrapped the School in its situation for several decades. In the end, however, and contrary to this posture of despair, we conclude that a concentrated, aggressive, and multi-pronged effort can lead to a great improvement in the status of teaching and of research on education on the Berkeley campus. We stress, however, that this effort must be an exceptional one, and that reliance on routine campus procedures and mechanisms will yield little by way of positive change" (p. 26). The applicability of these comments to your efforts on behalf of the University is clear.

Internal Reform

Having devoted so much effort to advising the Committee on how it ought to implement its Charter, I would be remiss if I did not acknowledge that many of the problems that have plagued the University's schools of education and teacher education programs have been self-inflicted.

Certainly, until recently we have failed to define properly our role and mission as a first-rate professional school capable of creatively blending individual faculty research interests with the research needs of the professional community. We acknowledge that failure. We were not as bad as our critics said, but, alas, we were not as good as we should have been. We now have thought long and hard about the reasons for our failure. We now believe we not only know how to avoid the mistakes of the past, but how to take our place as the finest school of education in the nation. The Good School of Education provides you with some information on how we expect to get there. We in the School are attempting to live with the advice we have given to you.

In making my final comment about the relationship between the larger University community and School of Education faculty, I am reminded of a story told by J. Robert Oppenheimer in his book, The Open Mind (1955).

Oppenheimer tells of the great mathematician Hilbert who, had the world permitted him, would have liked to think of his studies in mathematics as being totally independent of worldly vicissitudes. Hilbert had a colleague, an equally eminent mathematician, Felix Klein, who was certainly aware, if not of the dependence of mathematics generally on society, at least of the dependence of mathematics on the physical and applied sciences which nourish it and give it application. Klein used to take some of his students to meet once a year with the engineers of the Technical High School in Hanover. One year he was ill and asked Hilbert to go in his stead. Klein, aware of Hilbert's predilections, urged him, in the little talk he would give, to try to refute the then prevalent notion that there was a basic hostility between mathematics and science and technology. Hilbert promised to heed Klein's advice; but when the time came, a magnificent absentmindedness led him instead to speak his own mind: "One hears a good deal nowadays of the hostility between mathematics and the applied sciences. I don't think this is true, Gentlemen. I am quite sure that it isn't true, Gentlemen. It almost certainly isn't true. It really can't be true. Sie haben ja gar nichts miteinander zu tun. They have nothing whatsoever to do with one another" (pp. 88-89).

Today, the problems that beset the public elementary and secondary school system deny us the luxury of such quaint absentmindedness. The longer we deny the mutual dependence between the University and the schools, the worse our mutual difficulties will become.

In ending these remarks, I want to express again my thanks to you and your colleagues on the Committee on Education. If I can be of further assistance, please do not hesitate to call on me.

Yours in progress,

Bernard R Gifford

Bernard R. Gifford
Dean

SUMMARY

The University, the campuses and individual schools and departments of education have substantial responsibilities for providing research, training, service and leadership in the field of education. The responsibilities of the different units differ. As yet, however, none is fully meeting its obligations to improve education.

Part I of this report describes what missions we believe the University of California should pursue -- and what changes the University and the campus administrations must make for the University to assume leadership in the reform of public education. Part II of this report describes what the missions of the School of Education at Berkeley should be, our current efforts and plans, and the additional resources and other changes we must yet obtain if we are to achieve our objectives.

I. MISSIONS OF THE UNIVERSITY IN THE FIELD OF EDUCATION

Three overriding principles must guide the University as well as schools and departments of education on the campuses in the pursuit of missions in the field of education:

1. Given limited resources, we must concentrate those resources, both within and between campuses, on programs and services of highest priority. Resources and responsibilities in education should be reallocated to programs and units which (a) make a unique contribution to the knowledge or practice of education, (b) contribute to filling important social needs and (c) build on the special strengths of the University or the campus. We recommend that the University create at least two major centers of excellence -- one in science, mathematics and technology education and a second in language and literacy education.

2. Given increasing demands on a variety of programs, the University must cooperate more closely with other higher education segments. To make greater use of limited resources, the University administration should take the lead in promoting appropriate collaborations among University campuses and with the

State University system and private institutions. This will require clear and strong mechanisms for coordination and control, but the benefits can be substantial.

3. Only programs and services which can maintain the University's high standard of quality should be continued. The indicators used to evaluate quality, however, must be appropriate to the University's overall missions in the field of education, missions which embrace basic and applied research, professional training and service.

In light of these overriding principles, the University should focus on five missions in the field of education:

1. Preparation of individuals for pivotal positions in the profession of education. Professional training programs in the University should be geared toward (a) the creation of leadership for educational institutions and (b) the development of model programs that build on the strengths of a research university.

The University of California should concentrate teacher training in a few highly select and experimental programs which are strongly linked to disciplinary departments in the University. These model programs should develop, test and evaluate research hypotheses to improve teacher training. In addition, the University should increase resources and programs for the continuing education of teachers already in the classroom.

In the area of advanced professional training, the highest priority should be doctoral training of high-level school and community college administrators. Training of additional curriculum designers and evaluators and of specialists in the application of computer technology to education are also top priorities. To achieve these objectives, the University should take steps: (a) to develop strong Ed.D. programs, grounded in theoretical and empirical knowledge and appropriate to the needs and objectives of high-level educational professionals; (b) to encourage greater collaboration among institutions and campuses in the provision of advanced professional training; (c) to expand, within limits, in-service training and continuing education for administrators and other professional education specialists; and (d) to accord advanced professional training in education the same importance and legitimacy accorded training in law and medicine.

2. Training of scholars and researchers for service in colleges and universities, policy research organizations, governmental agencies, foundations and industry. The training of scholars and researchers is and must remain a central University mission in the field of education. The training of scholars and researchers in education must, however, meet special criteria required also for the mission of advancement and dissemination of knowledge.

3. Advancement and dissemination of knowledge concerning educational policies, processes, practices and problems that show promise of yielding to scholarly analysis, research (both basic and applied) and development. First, research and the training of scholars in education must be linked to actual or potential application to the field or the profession of educational practice. Research-oriented students must be provided a basic knowledge of the nature and problems of teaching, learning and school organization in our society, and researchers and practitioners must be brought together to learn from each other. Second, the several fields of study which contribute to our knowledge of education must be more strongly integrated within our research and research training programs. An integrated core curriculum, joint faculty appointments and courses and multidisciplinary projects, institutes and seminars are mechanisms to increase such integration.

4. Application of knowledge about learning, teaching and organizational management to educational institutions, with a view toward improving educational practice and policy. Services to the education profession and the schools should meet three criteria. First, services by different units should be coordinated and complementary. Second, services conducted by academic units (schools and departments of education) must be integrated with academic functions. Third, service activities must be based on partnerships and collaboration among the University, educational practitioners and policy makers.

5. Public advocacy of the improvement of education. The University must mobilize public support for the improvement of our schools, and it must direct more of its own resources to education and make the study of education on University campuses a central activity.

II. PROGRAMS, STUDENTS AND MISSIONS OF THE GRADUATE SCHOOL OF EDUCATION AT BERKELEY

The Graduate School of Education at Berkeley currently has 34.5 Senate FTE faculty members (out of 40.5 authorized positions) and 26 non-Senate faculty members (most of whom are part-time). We currently enroll 370 students, 70 per cent of whom are in doctoral programs. The School attracts students of very high academic ability.

Resources for the School were cut severely over the past decade. The number of Senate faculty positions, for example, dropped from 45.2 FTE in 1975-76 to 34.5 filled positions today. Enrollments also dropped substantially, for several reasons, including uncertainty over whether the School would be continued. Today, however, we enjoy renewed campus support, as evidenced by the appointment of a new dean, authorization for six new faculty positions and an increase in our admissions quota for new students. To fulfill our missions, however, we will need additional resources.

The School is revising its programs and reallocating resources in order to concentrate on programs and services of highest priority and to maintain and enhance quality. The School is pursuing five primary objectives:

1. Development of a center of excellence in research and teaching of mathematics, science and technology education. As a first step in developing such a center, the School has instituted a University Seminar on Mathematics, Science and Technology Education. This seminar brings together practitioners and researchers from various fields to share perspectives on improving education. The School has also strengthened its links both with the Lawrence Hall of Science and with faculty members associated with the Search for Excellence in Science and Mathematics (SESAME), an interdisciplinary graduate group.

Although we have been authorized to hire six new faculty members by 1985-86, we will need four additional faculty members by 1988-1989, in order to build a comprehensive center that can provide national leadership in mathematics, science, and technology education. We have already begun to increase enrollments in mathematics and science teaching credential programs, fields where current shortages of qualified teachers are most severe.

2. Strengthening of programs in language and literacy, educational administration and evaluation, and educational psychology. To achieve a critical mass of faculty members in essential specializations by 1988-89, we hope to increase total Senate faculty in language and literacy from six to nine, in educational psychology from nine to ten and in educational administration and evaluation from eight to 11.5. In addition, we hope to recruit one faculty member in philosophical and humanistic foundations of education, to replace the sole remaining faculty member in this area, who will be retiring.

Faculty research projects, scholarly inquiries and demonstration projects in the field of elementary and secondary education are diverse and extensive. Many are directed to improving educational practice and policy making. These projects include, for example, policy analyses of California education programs and policies, bilingual education, improvement of teacher effectiveness, vocational education, the Bay Area Writing Project and the Bay Area Mathematics Project, among others. For 1983-84, the School and School faculty members received approximately $2.5 million in funding for such projects.

3. Development of new experimental programs in teacher education which complement the research and disciplinary strengths of the Berkeley campus. The School currently offers several innovative model pre-service and in-service teacher education programs. However, development of additional experimental programs, particularly those with a close relationship to the disciplinary departments, is hindered by current state teacher licensing and credentialing regulations. The School faces three additional obstacles to the improvement and strengthening of its teacher education programs: (1) continued low (even though improving) enrollments in critical subject areas; (2) low minority enrollments in teaching credential programs; (3) and low involvement of Senate faculty in teacher education programs. To overcome these obstacles will require the

University's moral, political and financial support of teaching in our society and of teacher training in the University. Although all Senate faculty members in the School will be expected to participate in teacher education or other credential programs, we seek to recruit one individual whose principal field of expertise is the development of programs for and research on teachers, teaching and teacher education.

4. Redesigning of advanced professional training programs to serve better education practitioners. Revised Ed.D. programs for school administrators, curriculum developers and specialists in educational technology are our top priorities in professional education. We are devising innovative Ed.D. programs that we expect will include: (1) alternatives to the traditional dissertation that better develop and demonstrate professional competence; (2) increased emphasis on field-based work and integration of such work with academic program components; (3) and an expanded core curriculum that all students would take. We are considering making the Ed.D. the normative doctoral degree for students in programs that largely serve professionals.

5. Integration of our service activities with the academic functions of the School. The School currently provides a wide range of services, including the Summer Program for Educators, the Institute for School Administrators, the UCB Gifted Program, the Learning from Text project (which instructs special-admit University students participating in the Summer Bridge Program) and the Bay Area Writing and Mathematics Projects. In addition, the School is initiating a number of major new service projects: the statewide History and Social Science Curriculum Improvement Project (the CLIO PROJECT), the Berkeley Institute for Micro-Computer Education Program, and planning for a major school improvement project directed toward enhancing overall instructional and administrative functions in a selected number of schools.

The School of Education at Berkeley has over the past year developed a strong sense of purpose and renewed faculty dedication to rebuild the School. If the University and the campus provide a similar commitment to the study and practice of education, we can build at Berkeley and within the University of California a major instrument for national leadership and improvement of education.

ACKNOWLEDGEMENTS

The accuracy of any predictions about planned changes and expected institutional responses can never be known ahead of time. We will never be able to argue that: "If these particular resources are deployed in this particular manner to this particular problem, then these changes and benefits will result." However, applied intelligence and good fortune can reduce the gap between the expected and the unanticipated.

In preparing this report, in which I argue that the University of California should invest additional resources in educational studies and to take direct action to promote basic changes in the relationship between schools of education and the larger university community, in order to create "The Good School of Education," I have benefited greatly from the advice and comments from a number of my colleagues in the School of Education. Their advice and intelligence have enabled me to speak with considerably more confidence about the proper role of a school of education, what it should be doing, what needs to be done, and, most important, the likelihood that the School will be able to achieve its objectives. A few deserve special mention:

Ami Zusman, ever mindful of the burdens a new Dean faces, has been most helpful; she has faithfully translated my fragmentary instructions, directions, and observations, usually transmitted by me while on the run from the last meeting to the next, into thoughtful, detailed and provocative draft memoranda.

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As helpful as all of these abovementioned friends and colleagues have been, I must admit that I have not always adhered to their good and wise advice. To all of them I offer my thanks and my apologies. To the reader, I offer a set of ideas that require more thought and additional clarification. Therefore, comments, especially criticism, are not only welcome but actively solicited.

Bernard R. Gifford
30 March 1984

I. MISSIONS OF THE UNIVERSITY IN THE FIELD OF EDUCATION

Within the last year, the American public has witnessed a steady flow of impressive reports from a wide variety of interest groups, each documenting the problems faced by the schools. What started out as a long overdue review of the status and performance of elementary and secondary education has turned into a steady stream of urgent requests for fundamental changes in the schools. In addition to A Nation at Risk, by The National Commission on Excellence in Education, reports have been issued by the Carnegie Foundation for the Advancement of Teaching (High School: A Report on Secondary Education in America), the Business-Higher Education Forum (America's Competitive Challenge), the Twentieth Century Fund (Task Force on Federal Elementary and Secondary Education Policy), the College Board (Academic Preparation for College), the National Task Force on Education for Economic Growth (Action for Excellence), and the National Science Board of the National Science Foundation (Educating Americans for the 21st Century: A Plan of Action for Improving Mathematics, Science, and Technology Education for All American Elementary and Secondary Students so that Their Achievement Is the Best in the World by 1995). In addition to reports representing institutional viewpoints, excellent books on school reform were also published in 1983 and 1984. Among the best is John Goodlad's A Place Called School. Some of the the factors often cited in these reports as either causes or effects of the dire state of contemporary American education include Vietnam, television, parental permissiveness, family disintegration, declining scholastic achievement, over-politicized school boards, teacher incompetence, ethnic and racial tensions, bussing for purposes of achieving pupil integration, bureaucratic inertia, fiscal stress, lack of accountability, over-regulation, and conflicting goals and objectives.

A list of ailments and their possible causes is no substitute, however, for a realistic plan of reform. Despite the volume of recent studies on the major ills of American schools, the list of suggested reforms is surprisingly unsophisticated and predictable. It includes reducing the individual student's flexibility in selecting his or her own course of study; increasing the number of required offerings in mathematics, science, language, literacy and computer science; increasing homework; lengthening the school day; extending the school year; recruiting the "best and the brightest" for the teaching profession; instituting merit pay for teachers; tightening the rules governing student behavior and dismissal policies; and a variety of vague plans for reorganizing the production and distribution of knowledge.

Missing from most reports are workable plans which could effectively engage major universities and their professional schools of education in the reform process. The identification of problems which beset the schools must be clarified and ordered and then paralleled by the search for professional leadership which can guide public commitment into effective action.

We embrace this opportunity as one in which professional schools of education in major research universities must make strategic, thoughtful and visible contributions. With this in mind, a major focus of our efforts during the next decade within the Graduate School of Education at the University of California, Berkeley, will be to develop the institutional capacity to respond to a carefully selected set of critical schooling issues, to engage that capacity in service to the University and the education profession, and to provide leadership, not only in areas of assessment and problem recognition -- on which recent reports have focused so clearly -- but also in the design and implementation of appropriate, effective and lasting educational reforms.

Ostensibly, major research universities, and especially their schools of education, constitute potentially vital resources for improving the schools. Judged by previous performance, however, fulfillment of this potential appears unlikely. In the past, for example, not only has the University of California rarely played a major role in educational improvement, it has sometimes been part of the problem. When the greater University community has involved itself in the schools at all, it has usually been a one-sided interaction, with the University establishing admission standards for high school graduates but without systematically nurturing the changes in teaching, organization and funding that those standards require.

Making matters worse, the study of education within the University has been viewed as a marginal enterprise. Writing about graduate schools of education in major American research universities, Harry Judge (1982, p. 6) has noted that "their position within the world of higher education, and often within their parent universities, is always ambiguous and often resented." In the realm of education, these schools and their faculties are often renowned, but within their own institutions they are forever unable, by the very nature of their applied missions, to measure up to the "pure" arts and sciences departments. Too often, in their efforts to attain credibility in the research university, many faculty members in schools of education "have tended to distance themselves from both the task of training teachers for elementary and secondary schools and that of addressing the problems and needs of those schools" (Judge, 1982, p. 6). Thus, many of those who should be most strongly committed to bringing research expertise to bear on the problems of the schools have remained aloof.

Inaction and aloofness are particularly unfortunate in the present situation. A greater opportunity for concerted and potentially far-reaching educational reform exists today than at any time since the post-Sputnik period of educational initiatives. The very illumination generated by current critiques of our educational system has also generated renewed interest by government, the schools, the public -- and the University -- in improving the state of public education.

The challenge we face is to ensure that the steps we take to improve education are more lasting than in the post-Sputnik period. At that time, we tended to respond with too little critical analysis, "quick fixes" without lasting commitment to resolving long-term educational problems, and too little interaction among the necessary participants in the process. Today, education needs bold initiatives and lasting commitment to improve students' higher-order intellectual skills, to attract, retain and stimulate the best teachers, to equalize educational opportunities and to develop working partnerships, both between the schools and higher education and among the various disciplines that can contribute to understanding and improving education.

For several reasons, the University cannot withdraw from these efforts, even if it wished to do so. First, as a public educational institution, the University has an obligation to contribute to the functioning and strength of the public education system of which it is a part. Educational reform has become a top state and national agenda, in the service of both material advancement and democratic objectives. State executive and legislative officials will not permit the University to ignore the need for improving elementary and secondary education, especially since such neglect will also constrict access to higher education by high school graduates unprepared for college-level work. Moreover, if this neglect and the resulting contraction of the college-ready population are perceived by the polity -- one which in California is increasingly Hispanic and Black -- to be in part the product of the University's indifference to the plight of the public schools, then the trust the polity now places in the University will expire. Without this trust, the University's future is bleak. More importantly, California and the nation will not survive if the ideal of democratic excellence, traditionally transmitted by the public education system, is discredited.

Second, the University's self-interest in student preparation mandates its involvement in education and schooling. Even though the University accepts only the top 12½ percent of California's high school graduates, substantial numbers of those students are inadequately prepared for University work. At Berkeley, for example, each year about 40 percent of the freshman class enrolls in Subject A, a remedial English course.

Third, unless the University takes countersteps, population and demographic changes in the next decade will result in significant enrollment declines and shifts in majors at University campuses. The college-age population is projected to decline sharply in the next decade. Even though the effects of this decline on University enrollments are likely to be less severe than on those of less prestigious systems, the smaller University campuses will disproportionately feel the pinch of reduced numbers.

Fourth, compounding the problem of decline in the absolute size of the college-age group is the increasing proportion of this group who will be members of ethnic groups, mainly Hispanics and Blacks, who historically have had low rates of high school graduation and even lower rates of University enrollment. For example, 15 percent of 1979 California public high school graduates were Hispanic and nine percent were Black; but in 1980 only six percent of first-time freshmen in the University were Hispanic and only four percent were Black. According to projections, Hispanics and Blacks will comprise 50 percent of all high school graduates by 2003. Moreover, if present trends continue, the University's ability to meet rising needs for scientists and engineers will fall even more steeply, since relatively few of those Hispanics or Blacks (or women) who enter the University major in mathematics, science or engineering.

The University could, and to some degree has, partially offset these trends by attracting a larger proportion of its traditional pool of applicants. The University could, for example, dip further into State University and community college student pools by instituting additional special outreach programs. It could aggressively market its offerings to students headed for private or out-of-state institutions. Or it could expand programs and service to older and other non-traditional students. All of these actions, however, would have both limited impact and negative consequences. The most effective long-term University response would be to promote significant improvements in precollegiate education, thereby increasing both the level of potential students' preparation for university work and the proportion of high school graduates and community college students who are University bound.

A final reason to involve the University in educational reform is the intellectual challenge intrinsic to the study of education and the presence in the University of resources for meeting the challenge. Education's multidisciplinary nature and its dual academic and professional purposes are often seen as problematic, but they provide an opportunity to make advances at the intersections of different disciplines and to implement them in the real world. The schools provide a site for study of broad theoretical and social policy questions with potential ramifications far beyond education itself. The University also has unique resources which can be directed toward the study and improvement of public education in its schools of education, its mathematics, science and computer science departments and its language and linguistics departments, among others. New and promising research and development are also taking place in fields such as cognitive learning and computer applications in education.

For all these reasons, the University must redouble its commitment to the field of education. In particular, even while the University necessarily maintains its research and training missions, it must strengthen that aspect of its role to which it has given too little attention in the past -- the direct application of knowledge to the improvement of learning and schooling. To do so, the University should focus on five missions in the field of education:

1) preparation of individuals for the profession of education and particularly for pivotal positions in the profession;

2) training of scholars and researchers for service in colleges and universities, policy research organizations, governmental agencies, foundations and industry;

3) advancement and dissemination of knowledge concerning educational policies, processes, practices and problems that show promise of yielding to scholarly analysis, research (both basic and applied) and development;

4) application of knowledge about learning, teaching and organizational management to educational institutions, with a view toward improving educational practice and policy, and improving coordination with high schools and community colleges; and

5) public advocacy of the improvement of education.

By itself, the University cannot wholly fulfill even these five missions, much less take over the entire responsibility for upgrading the public education system. Such a goal would both be inappropriate and fail to recognize the responsibilities, resources and roles of other actors. Thus, the five missions must be pursued in light of three overriding principles:

1. Given limited resources, we must concentrate those resources, both within and between campuses, in programs and services of highest priority. Resources and responsibilities for activities in the field of education should be allocated to programs and units which meet the priority criteria of:

a) making a unique contribution to the knowledge or practice of education;

b) contributing to filling important social needs; and

c) building on the special strengths of the University or the campus.

All or most campuses should perform certain tasks for which demand and local needs are strong. For example, most of the general campuses of the University should offer at least some special teacher training programs, but the scale and emphases of each program should vary with the objectives of the unit. This principle affirms that each campus should emphasize areas of strength and not attempt to duplicate or replicate the entire range of the University's missions in education, even at the largest campuses such as Berkeley and Los Angeles.

In short, we must create a limited number of centers of excellence in specific high-priority fields by reallocating and supplementing resources.

We see a need for at least two major centers of excellence, one in science, mathematics and technology education and a second in language and literacy education. These are the two most pressing and problematic areas in education today; they are also areas where the University can take advantage of rapidly developing knowledge about the processes of learning. Because teacher training is the most direct link between the University and the schools, both centers should have a strong focus on teacher training and research on teaching. They should also conduct both professional and academic research and provide doctoral training.

Given the unique resources of the Berkeley campus in science and mathematics and approved plans to establish a major science and mathematics education component in the Berkeley School of Education (described in more detail below), the first of these centers should be located in the School of Education at Berkeley. We recommend that the second center be established at UCLA, with its strengths in linguistics and its need and opportunity to respond to a large bilingual community. To develop these centers, we urge the Systemwide Administration to request supplementary funding from the Legislature to support at least several additional faculty/research positions in each area. If, however, the Legislature does not respond in full to such a request, the University administration must be prepared to reallocate existing resources among schools and departments of education in order to establish such centers as pivotal components of the University's educational design. Although establishment of such centers should not mean the abandonment of mathematics education or of literacy education at all other campuses, these centers must have the resources to provide leadership for the University as a whole and, indeed, for the nation.

2. Given increasingly complex demands on a number of programs, the University needs to cooperate more closely with other higher education segments. To make greater use of limited resources, the University must also encourage increased collaboration among University campuses and with the State University system and private institutions. In the past, differences in authority, prestige, program emphasis or budgetary allocation inhibited fruitful collaboration, except on a small scale. The University administration should take the lead in

promoting appropriate collaborations and in working out arrangements with other institutions to reduce unnecessary obstacles.

The benefits of such collaboration can be substantial. For example, the School of Education at Berkeley has participated for 17 years in a joint doctoral program in special education with San Francisco State University. UCLA has a similar collaboration. Through such joint programs, campuses are able to pool their faculty expertise, not only in education but in a number of other professional schools and social science departments. The Berkeley program has graduated approximately 35 doctoral students from its joint special education program and placed them in a variety of academic and professional positions.

Building on the example of the special education program, the School of Education at Berkeley recently initiated discussions with both San Francisco State University and the University of California at Davis to develop a joint doctoral program in higher education. The demand for professionals, government analysts and researchers in higher education is considerable, yet at present (since the phasing out of Berkeley's own renowned program in higher education) no public institution in Northern California has the ability on its own to offer a doctoral program in this area. By pooling our resources, both within and outside departments of education, we should be able to amass substantial faculty expertise from several, diverse fields. Moreover, the program may have even wider effect since at least two other State University campuses are discussing subsidiary arrangements with San Francisco State to participate in the program.

Developing such a three-way program across University campuses and other institutional segments will not be easy. It will require clear and strong mechanisms for coordination and control. If successful, however, it should provide a model for other cross-campus and cross-segment programs in the field of education as well as establish a tradition of collaboration between the units. Given always finite resources for public higher education, such collaborative programs will become ever more necessary.

3. Only programs and services which can maintain the University's high standard of quality should be continued. Programs and services which do not meet that standard should be upgraded, if feasible, transferred to another unit which can operate them more effectively, or terminated. The indicators used to

evaluate this quality, however, must be appropriate to the University's missions in the field of Education, missions which embrace both basic and applied research and professional training. Programs should not be evaluated solely by the criteria derived from arts and sciences departments in the University, any more than they should be evaluated by the criteria applied to schools of education in the teaching-oriented State University system.

"Quality" in University programs in education has a number of dimensions.

a) Academic programs must have:

   i) a "critical mass" of faculty members adequate to cover the specialization;

   ii) a balance between common breadth requirements and individual specialization and flexibility (especially at the doctoral level);

   iii) curricula appropriate to the degree or credential offered and reflecting recent developments in the field; and

   iv) a fit with students' career objectives.

The 1976 review of education programs in the University (the Cheit Report) suggested 3.0 FTE as a rule-of-thumb measure of minimum faculty members in an area. This figure seems reasonable, although major programs should certainly have greater numbers if they are to have their intended impact.

b) Faculty members in Education, like those in all departments in the University, must be evaluated on the basis of:

   i) teaching;

   ii) research and creative work;

   iii) professional competence and activity; and

   iv) University and public service.

In a professional school, these criteria must be defined in ways which adequately reflect the school's multiple missions. The School of Education at Berkeley has drafted a set of criteria for faculty appointment and promotion which specifies quality standards and measures (Appendix). These guidelines stress both superior intellectual attainment, as evidenced both in teaching and in research or other creative achievement, and the requirement that a faculty member's work have some direct or potential application to the field or the profession of educational practice. We believe these criteria would be equally appropriate for other schools and departments of education in the University.

c) Student quality in schools and departments of education in the University should be evaluated in terms of both admission requirements (e.g., incoming grade point averages and GRE scores, adequate grounding in the basic disciplines) and, more importantly, output measures (including quality and appropriateness of the doctoral dissertation or Master's thesis, career placement, retention, student satisfaction and employer satisfaction). One frequent charge against schools of education is that their students come from the lowest ability levels among college students (Table 1). At the School of Education at Berkeley and, we suspect, at other schools in the University system this simply is not true. Both teaching credential and doctoral students are highly qualified (Table 4). More problematic is the difficulty in judging Ph.D. dissertations in education which appropriately combine traditional disciplinary research and theory with professional application. A University committee on education comprised of representatives from within and outside the several University schools and departments of education might help define criteria appropriate to a Ph.D. in Education. A perennial, and even more difficult, task is distinguishing, in practice as well as in theory, between Ph.D. and Ed.D. programs and dissertations.

d) The quality of service in education must be judged in terms of its appropriateness to the University's missions and the evaluation by clients of the service.

MISSION 1: PROFESSIONAL TRAINING

Professional training programs in the University should be geared toward (a) the creation of leadership for our educational institutions and (b) the development of model programs that build on the strengths of a research university. Professional training in Education falls into two main categories: teacher training and the advanced training of those who manage, set policy for, or provide support for educational institutions or curricula (e.g., school and college administrators, curriculum developers and school psychologists). In each of these areas, the University has important but limited obligations.

A. Teacher Education

The University does not have and should not assume primary responsibility for teacher training in California. That responsibility appropriately belongs to the State University, the state's principal teaching institution. Moreover, for sound public policy reasons, private colleges and universities also have a role to play in California's provisions for teacher education. But neither should the University abandon teacher training. Over the past decade, the University substantially retreated from teacher training, in part because the teacher surplus drove down enrollments in teacher credential programs; but the retreat also reflected the University's general withdrawal from involvement with the concerns and practice of education in the public schools.

We must reverse this trend. If the University is to have an impact on reforming and upgrading public education, it must apply its prestige, scholarship and resources to public school teaching. To do this, it must develop and strengthen selected teacher training programs which can both attract some of the brightest students in the state to the teaching profession and further the art and science of teaching.

Within its specialized and limited role in teacher training, the University should concentrate on high-need areas where it can be most effective in both its pre-service and in-service programs. Given present needs, it should focus in particular on mathematics and science education, and on writing and literacy. Moreover, as a research university, the University of California should concentrate teacher training in a few highly select and experimental programs which, through development, testing and evaluation of research hypotheses, may improve teacher training. Especially since little agreement exists about what training or attributes make for a good teacher (Ornstein and Levine, 1981), teacher education in the University should be directed toward developing and evaluating alternative teacher-training models. These models should be informed by those research and theoretical contributions to teaching, learning and subject areas which the University's academic and professional departments can offer. They must also better integrate pedagogical and disciplinary knowledge, which typically are poorly integrated in teacher training programs. This emphasis fits closely with the recommendation of the 1976 Cheit Report (pp. VI - 3 and 4) that the University's responsibility in teacher education is to:

1) advance the art and practice of teaching and teacher training through knowledge gained from research;

2) apply its research activities in this area to the development of new models of teacher education; and

3) provide critical analyses of developments in teacher education and, through such analyses, contribute to public policy.

Current teacher licensing and credentialing regulations in California form a major obstacle to the University's ability to implement such experimental programs. The leadership of the California Commission on Teacher Credentialing has moved in recent years in the direction of greater bureaucratic control over teacher licensing and credentialing practices. It has increased the list of courses required of prospective teachers and aspiring administrators and multiplied the number of recognized subject matter and occupational specialties subject to intense regulatory scrutiny. Under these current regulations, with their emphases on credit accumulation and forms processing, rather than on content and context, it is difficult to create flexible programs that link first-rate scholarship to excellent pre-professional pedagogical training, the kinds of programs appropriate for the University to offer. The School of Education at Berkeley has initiated discussions with State Superintendent of Public Instruction, Bill Honig, on ways to diminish the deleterious effects of inappropriate credentialing and licensing requirements on the capacity of University schools of education to develop more effective models of professional training. We look to other segments of the University community to join us in the effort to address this problem.

If the University is to make a significant contribution to teacher quality, we must devote greater attention to training and upgrading of teachers after they are in the classroom. Most of those who will teach in our schools for some time to come are already in the classroom. Research indicates that a new teacher continues to learn and develop for several years after entering teaching (Smith et al, 1983). We need to identify critical points in a teacher's development at which additional training or workshops would be most effective (say, after two years in the classroom) and attempt to incorporate follow-up in-service components into our pre-service programs. Such a move would require close coordination with school districts and may not always be feasible; but to the extent that credential graduates take positions within reasonable distance of the University campus, some in-service linkage may be possible. Berkeley's present three teacher education programs all have a pre-service/in-service linkage mechanism.

Furthermore, recent changes in state legislation which mandate continuing education for teachers (and administrators) will place greater demand on institutions to expand their in-service offerings. Expansion of in-service programs, however, should only occur after a careful examination of veteran teachers' educational needs and of programs and services appropriate for University units to offer. Finally, the University should recognize the artificiality of a distinction between pre-service and in-service education. They should provide funds for both, at least to the extent that in-service education takes place through formal and evaluated means.

Not all University campuses should offer teacher training. Those which do not or which offer it only in specialized areas should work out arrangements with neighboring State University campuses to provide access to teaching programs (as well as administrative credential programs) by University students pursuing other degrees. Under California's Master Plan for Higher Education, the University receives the top cadre of students in the state. It is critical, then, that the University guide and facilitate the entry of these top students into the teaching profession.

B. Advanced Professional Education

The University of California has a unique responsibility for fostering leadership for our educational institutions. Given the University's monopoly on the awarding of the doctorate, no other public institution in the state can provide doctoral-level training for school and college administrators and other higher-level professionals, such as curriculum designers, evaluators and school psychologists. Although some private universities in the state offer professional doctoral training in education, they are not obliged to meet this public need; the extent of their response thus varies. Yet both the need and the demand for advanced professional training of educators are great. For example, surveys indicate that in the next decade a large proportion of present school and community college administrators in California will retire or resign. They will need to be replaced by new administrators who have yet to be trained. Moreover, many of the recent critical reports on the state of education have stressed the need for better qualified educational administrators and other specialists.

Just as with teacher education, however, the University should concentrate on those areas of advanced professional training with the greatest needs, where a University campus can offer unique skills and resources and where research can be brought to bear on professional training. In the area of advanced professional training, the highest priority should be the training of high-level school, community college, and higher education administrators (e.g., school district superintendents, top community college administrators and other higher education professionals). In addition, given the great need to revise school curricula to incorporate new knowledge about subject matter and pedagogy and to make use of developing technology, the University should also provide more training of curriculum designers and evaluators and of specialists in the application of computer technology to education. To achieve those objectives, the University should take four major steps.

As a first step, the University must develop strong professional doctoral programs, which are grounded in theoretical and empirical knowledge but which are more appropriate to the needs and objectives of high-level educational professionals. This is not easy. In most major research universities, the pull of the research model and the higher status of the Ph.D. has two effects on professional training: it draws most graduate enrollments in Education into Ph.D. programs, and it draws Ed.D. programs, which should be oriented to the development of professional skills, toward the Ph.D. research model. Lewis Mayhew (1974, p. 68) has argued that typically there is "an unfortunate regression of Ed.D. programs toward the form if not the substance of Ph.D. programs, caused by the presumed higher regard in which the Ph.D. is held, which is in turn largely due to the hegemony in universities of graduate faculties in arts and sciences." The result, Mayhew states, is that "Ed.D. candidates have been forced to overcome hurdles largely irrelevant to their professional futures." In a brief survey of several of the major graduate schools of education, we found that, even when distinctive differences between Ph.D. and Ed.D. programs existed on paper, they largely disappeared in practice.

Because high-level administrators are generalists who must deal with interrelated social, psychological, bureaucratic, financial and technical problems, they should receive broad, not narrow, training. Training for educational administrators and other specialists should be oriented not so much to extend research and theory but to develop skills to apply theory and research to practice. Ed.D. programs should also give professional students an opportunity to learn from additional professional settings and to integrate these experiences with their academic work. Finally, Ed.D. programs should be designed for realistic completion in a fixed, finite time period. To meet these objectives, the School of Education at Berkeley is considering redesigning its Ed.D. programs to include an expanded core curriculum, "rotating internships," alternatives to the traditional dissertation and other steps. We shall have more to say about these developments when we discuss the School.

As a second major step, the University should encourage greater collaboration among institutions and campuses in the provision of advanced professional training. Given limited resources, the University should limit professional doctoral programs to a few campuses, primarily Berkeley and Los Angeles. Yet the demand for high-level professionals exists throughout the state, particularly for school and college administrators. In order to expand the availability of resources for professional training, then, campuses need to join forces. Earlier we noted the School of Education's plans to create a tripartite program in higher education, including a specialization in community college administration, with the University's Davis campus and San Francisco State University. A similar arrangement for training of public school administrators might be considered.

Not all such collaboration should result in joint programs. In many cases, it might be more appropriate (and easier) for a single campus to operate a doctoral program, but also to form agreements with other campuses or institutions to facilitate their students' participation in doctoral courses or to coordinate programs offered by the different institutions. For example, some students complete an administrative services credential or an M.Ed. before undertaking an Ed.D. degree. In particular, the administrative services credential could, if well planned, provide the field experience component of an Ed.D. program in administration.

As a third major step, within limits, the University should expand in-service training and continuing education for administrators and other professional education specialists, just as it should for teachers, and for the same reasons: to encourage professionals to keep abreast of new developments and to enable them to improve and expand their knowledge and skills. According to the Cheit Report (1976, p. VI-4):

> The general mission of a professional field in the University includes the dissemination of new knowledge to practitioners. Accordingly, the University has serious obligations for the continuing education of professional practitioners in the field of education. ... It is the University's responsibility to (1) use scholarship to advance the art and through application raise the level of practitioner training, (2) develop new models or demonstration programs that others can use, and (3) contribute through theory and concepts to public policy.

The Cheit Report goes on to criticize the University's isolated approaches to in-service education in the past, such as reliance on consulting by individual faculty members and limited credentialing activities. We must develop a more coherent approach to in-service professional education.

As a final step, the University must accord advanced professional training in Education the same importance and legitimacy accorded training in law or medicine. Professional education training, including Ed.D. programs, must be supported as critical, not peripheral, activities.

MISSIONS 2 AND 3: ADVANCEMENT OF KNOWLEDGE AND TRAINING OF SCHOLARS

Two interdependent missions are central to the University's responsibilities in the field of education:

1) advancement and dissemination of knowledge concerning educational policies, processes, practices and problems that show promise of yielding to scholarly analysis, research (both basic and applied) and development; and

2) training scholars and researchers to advance and disseminate such knowledge for service in colleges and universities, policy research organizations, government agencies, foundations and industry.

The Cheit Report (1976, p. VI-6) states the centrality of scholarly inquiry (and training):

> In the University, scholarly inquiry is basic to professional education. Professional schools, at their best, reflect an inner tension generated by their orientation toward both external practice on the one hand and scholarship in the basic disciplines on the other. A professional school in the University dominated by one of these two orientations will not reflect this tension and is not doing a University-level job. Thus, we emphasize the need for scholarly inquiry, first, because of its importance to the University's basic mission and, second, because it is an essential ingredient for the University's professional schools, if they are to serve the profession.

Research is essential if we are to improve elementary and secondary education: we must understand schooling and learning processes before we can make effective recommendations for improvement. The University, of course, is the primary state-supported academic agency for research and has sole authority among public institutions to award the doctorate. As such, it has unique responsibility to conduct research and scholarly training in the field of education. Moreover, a professional school within the University (and especially at Berkeley) could not long survive without substantial faculty attention to research. But, because schools of education have responsibility for practice and because the field is multidisciplinary in nature, research and the training of scholars in education must meet two criteria.

The first of these criteria is that research and the training of researchers and scholars in education must be linked to actual or potential application in the field or the profession of educational practice. Research and research training are essential missions in the University, but research and training must be applicable in the real situations faced by our schools. Too often, the perceived low status accorded work on "practical" problems has prompted faculty members to concentrate solely on "basic" theoretical concerns with little or no relevance to educational practice. Judge (1982, p. 40) asserts:

> The trouble with [graduate schools of education] is that the inexorable logic of the market has obliged them ... to distance themselves from the contaminating world of practice and training. ... The culture has not grown, at least not in sufficient numbers, scholars with a commitment to improving practice based upon research.

Like other research universities, this University gives few incentives or rewards to faculty members for work on professional problems and tends to denigrate work outside the basic disciplines. Unless this situation is changed, we cannot expect adequate attention to the problems of the field. That the situation can be changed is attested to by the fact that some professional schools in the University, such as business administration, while still bound by the dominant culture of basic research, have successfully related research to the needs of the outside world. What must be done, then, is to support such efforts in other professional schools. The School of Education at Berkeley is attempting to do so by revising faculty appointment and promotion criteria to include the expectation that research have direct or potential application to the field. But the campus and the University must support such efforts as well.

If research is to inform and improve educational practice, research training must give attention to the problems, issues and perspectives of the field. Ph.D. programs must be grounded in a basic understanding of the nature of teaching, learning and schooling in our society. All Ph.D. students should take common core courses which provide an integrated, graduate-level perspective of the field of education. Such a core curriculum should also expose students to the various complementary methodologies with which educational problems can be attacked. Although this core might be somewhat less extensive than that for practice-oriented Ed.D. students, in order to permit Ph.D. students greater time for specialization, it should nevertheless expose students to the critical issues in education. In addition, if research and practice are to inform each other, Ph.D. and Ed.D. students must be able to learn together as they deal with both research- and practice-oriented problems and are exposed to research- and profession-oriented faculty. Much attention has been given to differentiating Ph.D. and Ed.D. programs; it is equally important to determine what elements should be shared.

A second criterion for research and the training of scholars in education is that the several fields of study which contribute to our knowledge of education must be more strongly integrated. The phenomena of education are inherently multidisciplinary. For example, one cannot effectively teach or conduct research in mathematics education without some understanding of the various psychological theories explaining how students acquire problem-solving skills. One cannot design programs to increase students' problem-solving skills without an understanding of the social structure of the school. Strong integration and interaction both among the disciplinary fields represented in a graduate school of education and between the school and the disciplinary departments are therefore essential. Too often, however, researchers in different fields of education are isolated from one another, as well as from their colleagues in the disciplinary departments.

We need to create mechanisms to break down barriers between researchers so that different fields can better cross-fertilize one another. An integrated core curriculum can perform this function, particularly if it is designed to bring together not only students but also faculty members from different areas. Joint appointments and jointly taught courses by faculty members from different areas within schools of education and from different departments can also facilitate interaction among those in different fields. Multidisciplinary projects, institutes and seminars in which both faculty and students participate are other means. We envision the centers of excellence, mentioned earlier (p. 7 above), as an ideal mechanism for bringing together researchers and practitioners with different expertise and different interests to work on common concerns.

MISSION 4: SERVICE TO THE FIELD AND COORDINATION WITH INSTITUTIONS

The University has a responsibility to improve educational practice and policy through direct application of its knowledge about learning, teaching and organizational management to the field. Service to the field takes many forms. One of the most important is research applied to issues of schooling. But, given its expertise, the University has an obligation and an opportunity to provide more direct services to the profession and the schools as well. These services include, for example, faculty consultation on current problems, conferences, seminars and workshops for educators, demonstration projects, coordination with the schools in the preparation of students, particularly to higher education, and programs for special student populations. The University's responsibilities in providing service must, however, remain subsidiary to its central teaching and research missions.

Service activities in the University have suffered from several shortcomings. First, they tend to be established haphazardly, without a clear rationale for what services a campus unit should or should not provide. The Smelser Commission, a campus committee appointed to review education at Berkeley, concluded that service activities "appear to have grown somewhat opportunistically -- that is, when an entrepreneurial individual or unit has been able to secure resources for a discrete program" (Commission on Education, 1981, p. 45). Second, coordination among units providing services has been poor. Lack of coordination leads, on the one hand, to overlap and duplication of services and, on the other, to unrecognized and therefore unmet gaps in services provided. Third, and related, too much of the service mission has been provided by individual faculty members acting as consultants to school districts or policy makers or by small isolated units. The Cheit report (1976, p. VI-5) notes that, while service by individuals is appropriate, "the provision of expertise in this way does not necessarily lend itself to a coherent approach to large social problems in education." Finally, too much of the University's service has been service to the field without input or coordination from professionals in the field being so "served."

Service activities, then, must be conducted on the basis of three criteria: First, services provided by different units must be better coordinated and complementary. Different units have different functions. No one unit should attempt or be expected to undertake all the service activities provided by the University or the campus. At the same time, we must develop better mechanisms and procedures for coordinating related service activities both within and across campuses so that these activities can build on each other's strengths and achieve a cumulative impact.

The University should develop specific Universitywide projects to bring together the differing resources of its campuses and many units, in order to render policy and technical assistance to policy members and school administrators in California and the nation. One of the most critical of such projects would be to revise and develop new curricula for the schools in areas where both new developments and new approaches to understanding a subject area have outpaced existing curricula. Curricula in the sciences and the social sciences are perhaps particularly in need of redesign. Similarly, the Cheit report recommends that the University assemble research teams from different units -- education departments, other departments and organized research units -- to collaborate on pressing social needs.

Second, service activities conducted by academic units (schools and departments of education) must be integrated with academic functions. The primary functions of academic departments are research and training. Only those service activities which contribute to and grow out of a school of education's research and training functions should be conducted by the school. For example, in-service professional development should build on the theoretical concepts and approaches utilized in pre-service training, and the knowledge gained from working with professionals in the field should be fed back into pre-service programs. Service projects should complement the research strengths and interests of the faculty, provide sites for research and professional training for students and provide opportunities for further development of professionals in the field. The School of Education at Berkeley has developed a set of criteria to rationalize service activities offered by the School (see Part II p. 47FF below).

Service activities not integrated with academic functions should be offered by units other than schools or departments of education. Many such activities are important and should be provided by other University units. Perhaps most important is coordination with high schools and community colleges in the articulation of programs for college-bound students and the preparation and guidance of students to higher education (particularly, but not exclusively, to the University). Other units might appropriately provide outreach programs or workshops which are one-time only not linked to the teaching or research programs of the school of education.

Third, service activities must be based on partnerships and collaboration between the University and educational practitioners and policy makers. Service programs must be a two-way street, with input from the profession as well as from the University. Weiner (1981, p. 19) argues:

> ... our public service programs, as is now the case with the Bay Area Writing Project, must be designed and implemented with the participation and collaboration of educational policy makers and practitioners. Otherwise, we risk being told again, "Please don't give me any more 'help.' I haven't recovered from the last time you 'helped' me."

We must incorporate professionals in other education prorams as well, not only because their inclusion will facilitate working relationships but because professional concerns are essential to informal discourse on the campus. For example, just as University experts go out to the schools, so should we bring more expert teachers and administrators to the University to teach in our programs, work with University faculty members on curriculum revisions and collaborate in a range of other activities.

In a report to the Carnegie Foundation for the Advancement of Teaching, Gene I. Maeroff (1983, pp. 3-5) presents five basic principles for school-college collaboration:

> First, to achieve effective school-college cooperation, educators at both levels must agree that they, indeed, have common problems.
>
> .....
>
> Second, in order to achieve effective collaboration, the traditional academic "pecking order" must be overcome. Colleges and universities have had -- for many years -- a "plantation mentality" about the schools. Higher education set the ground rules and the schools were expected passively to go along.
>
> .....
>
> Third, if school-college collaboration is to succeed, cooperative projects must be sharply focused.
>
> .....
>
> Fourth, it seems quite clear that if school-college cooperation is to be successful, those who participate must get recognition.
>
> .....
>
> The fifth commandment is equally important: For school-college cooperation to work, it must focus on action -- not machinery.

Ernest Boyer, President of the Carnegie Foundation, argues that such collaboration should go further: "Every college and university should establish a partnership with one or more school districts to provide educational and cultural enrichment as determined by principals and teachers at the schools" (Maeroff, 1983, p. viii).

MISSION 5: ADVOCACY OF THE IMPROVEMENT OF EDUCATION

Above and beyond its missions in research, training and service in the field of education, the University must be an advocate, both externally and internally, for the advancement, enhancement and improvement of educational practice and the education profession. The University of California is one of the world's premier universities and a major and powerful institution in this society. As such, it must exercise its authority, prestige and leadership to: (a) mobilize public attention to and support for the improvement of our schools and (b) direct more of its own resources to education and make the study and advancement of education on University campuses a central, not a peripheral, activity.

We noted at the beginning of this report that the University in the past has had a poor record as an advocate or supporter of study, training or service in education. The Cheit Report found that, in 1973-74, only 1.4 percent of total University General Fund expenditures went to programs in education. A decade later, the University is directing even less of its resources -- only 1.2 percent of University expenditures -- to education programs. The numbers of faculty members in departments of education have also declined over the past decade. At the School of Education at Berkeley, for example, the number of Senate faculty positions dropped from 45.2 FTE in 1975-76 to 34.5 filled positions in 1983-84. Top University and campus administrators have until recently been absent from national and state meetings to discuss education's future and have not followed the example of Stanford University's President Donald Kennedy and Harvard's President Derek Bok in declaring the full support of their institutions to improving the public schools.

The University can do much to mobilize public support on behalf of the schools and to clarify the agenda for educational reform. The President of the University and the Chancellors of the University's campuses must themselves speak out on the needs and problems of our schools, students and teachers and present proposals for reform of the educational system which address these needs. As the chief representatives of the University, these individuals command media and policy makers' attention and can, therefore, exercise great influence in informing and persuading the public. President Gardner, as the Chairman of the National Commission on Excellence in Education, has already taken this path. The present Systemwide commission on the University's missions in education is further evidence of his concern and commitment to the reform of education. We urge President Gardner to transmit his own urgency regarding educational improvement to the Chancellors of each campus.

The University's top-ranking officials and others within the University community should broaden the current debate about educational practice. Discussion must go beyond iteration of present shortcomings of our schools. We must affirm what our schools do do well, counterbalance excessive criticism and unrealistic expectations of the schools, and restore the public's faith that the schools can be effective in their own sphere. The University must help to clarify what the schools do not have the capacity to achieve. As critical as such objectives are, the schools do not have the resources or ability on their own to meet the myriad societal objectives that have been thrust upon them. While the schools must continue to contribute to the goals of integration and equality, the schools alone cannot overcome segregation and discrimination in our society. Their failure to do so should not divert attention from what the schools can do.

On the other hand, the University must adopt a broader vision of educational reform than may be obtained from the daily newspaper. The University must advocate major changes in the educational system to redress the overriding inequities and irrationalities which cripple the system's ability to perform well, even though such changes will not come easily or quickly. Chief among these is the low status of the education profession; no reform will be effective unless the respect, working conditions and rewards accorded teaching are made more commensurate with the responsibilities of that task. University spokespersons and education experts must make the public and policy makers aware that achievement of desired educational outcomes cannot come overnight and must urge them to make a sustained long-term commitment to education. In advocating educational reforms, the University also must look beyond its own needs for well-prepared college students and beyond its own existing education programs and services.

Within the University, the Systemwide and campus administrations and Academic Senate must make education study and training a more central activity -- by allocating more funds to education, clarifying the University's top priorities in the field of education and encouraging and rewarding research on educational problems. Here, too, the President and Chancellors, by their words and their examples, can make education a more valued enterprise within the University. The University should allocate more funds for educational research and for faculty positions in education departments. Most importantly, the University must establish centers of excellence for study and training in teaching, learning and curriculum development, which can attract national figures from both within and outside education departments to work on educational concerns. University and campus leaders must encourage researchers outside schools of education, both separately and in collaboration with those in schools of education, to study learning and schooling processes and institutions and to make greater use of the schools as research sites. The University must also call for and support innovative service projects, especially those which have prospects for dissemination to other areas.

In an essay written in 1876, not long after he had left California, Daniel C. Gilman (1898, p. 13), first President of the University of California, argued that institutions of higher education, through their academic departments and professional schools, should make for "less misery among the poor, less ignorance in schools, less bigotry in religion, less suffering in the hospital, less fraud in business, less folly in politics ..." The University of California needs to reaffirm that sense of purpose today.

II. THE PROGRAMS, STUDENTS AND MISSIONS OF THE GRADUATE SCHOOL OF EDUCATION AT BERKELEY

The Graduate School of Education at Berkeley is committed to the concentration of resources in programs and services of the highest priority and the maintenance and enhancement of quality. Given this commitment we have begun revising programs and reallocating resources to fulfill several objectives:

1) to develop a center of excellence in research and teaching of mathematics, science and technology education;
2) to continue and strengthen programs in other high-priority areas, particularly language and literacy education, educational administration and evaluation, and educational psychology;
3) to expand our role in the training of teachers for the public schools, through the development and revision of experimental teacher training programs which complement the research and disciplinary strengths of the Berkeley campus;
4) to redesign advanced professional training programs in order to serve better education practitioners, particularly school administrators, curriculum developers and specialists in educational technology; and
5) to concentrate our service to the education profession within activities which are integrated with the School's academic functions and which increase the ability of school practitioners to improve their own institutions.

These objectives require major changes in the current focus of the School. In concrete terms, for example, they mean that graduate programs in counseling psychology, adult education, philosophy, sociology, history, and anthropology of education are in the process of being closed out. The graduate program in higher education is also being phased out, although, as noted (p. 8 above), we hope to implement a joint program in higher education with other campuses. These objectives also mean that we expect a greater proportion of our students to be in credential and Master's programs, although doctoral training will remain the School's pre-eminent teaching mission. Pursuit of these objectives has also necessitated a new set of service policies and stimulated a number of new service projects. Most importantly, if we are to implement these objectives and to fulfill our missions in education, we need to hire additional faculty members with expertise in fields different from those of current faculty and with demonstrated interest and expertise in teacher education, in other professional training and in applications of research to educational practice.

PROGRAMS AND STUDENTS

The Graduate School of Education at Berkeley is comprised of four divisions and one faculty group -- the divisions of Education in Mathematics, Science and Technology; Education in Language and Literacy; Educational Psychology, and Educational Administration and Evaluation; and the faculty group in Educational Foundations. Each of the divisions offers specialized programs leading to the doctorate, Master's degree or a basic or advanced credential. Educational Foundations, formerly a division, is now listed as a faculty group because its doctoral programs are being phased out. However, a number of continuing students are still pursuing degrees in the Educational Foundations group, and some faculty members in the group are affiliating with the other divisions while they continue to offer courses in the foundational areas as well as to accept, upon special petition, a small number of graduate students for individualized programs. In addition, two interdisciplinary graduate groups including faculty from other departments, Search for Excellence in Science and Mathematics (SESAME) and Special Education, are affiliated with the School.

The School currently has a total of 34.5 Senate FTE faculty members and 26 non-Senate faculty members (most of whom are part time). We have been authorized to fill six Senate positions in the next two years. Tables 5 and 6 list the programs and degrees/credentials offered by the School, the faculty affiliated with each program, and student enrollments.

Currently, 370 students are enrolled in the School. Seventy percent are in doctoral programs, most of them in Ph.D. programs. Over the past decade, enrollments have shifted substantially from credential and Master's degree students to doctoral students, in response to several factors, including the teacher surplus in the 1970s, a decline in the prestige and relative salary accorded teachers, and earlier campus plans which called for Education to emphasize doctoral study. There has also been a marked decline in the number of doctoral students pursuing the Ed.D. and a corresponding shift to the Ph.D., a shift which began with the elimination of the foreign language requirement for the Ph.D. degree and which also holds true for most other major schools of education where both degrees are offered. We plan to reverse both these trends: to increase the numbers of both credential students and professional students in Ed.D. programs.

The trends outlined above for degree programs have been paralleled by a sharp decline in total enrollments over the past decade, a pattern also characteristic of other schools of education (and for many of the same reasons): the teacher surplus, expanded career opportunities outside education for women and minorities and the decline of education as a national priority meriting study, funding or status. Critical campus reviews, and what one review called a campus policy of "punitive starvation" led to uncertainty over whether the School itself would be continued as a separate unit and to a deliberate cutback in admissions. Within this context, enrollment declined even further.

Today, however, negative campus conditions are being reversed. We now enjoy stronger campus support, as evidenced by the appointment of a new dean, authorization for six new faculty positions and an increase in our admissions quota for new students. Overall enrollments of new students and applications to several programs increased this fall and we expect further increases as we rebuild programs, especially in the area of mathematics and science education.

The School attracts students of very high academic ability. New doctoral students admitted to the School have an average verbal and quantitative score on the Graduate Record Examination (GRE) of over 1200 -- a figure which compares favorably with those for students admitted to other professional schools at Berkeley (Table 4). For some divisions of the School, the average score of new Ph.D. admits is over 1300. Perhaps more importantly, GRE scores of new admits have risen markedly in the last two years as a result of deliberate School actions. Furthermore, contrary to popular perceptions, the quality of current Ed.D. students, as measured by GRE scores, is comparable to that of Ph.D. students. According to a sample of recent graduates, both Ph.D. and Ed.D. students take about the same amount of time to complete their degrees, 6-6½ years on average.

PROFESSIONAL TRAINING

A. Teacher Education

In a report to the Chair of the Berkeley Division of the Academic Senate on January 13, 1982, Chancellor I.M. Heyman reaffirmed his vision of the missions of the School:

> My image is a school devoted to the processes of teaching and learning rooted in the activities of those in the primary and secondary schools. A substantial component of faculty research, in my view, should be occurring in those schools. We should be mounting demonstration programs in various subjects, such as curriculum renovation, and seeking to generalize from their successes and failures and transmitting these results widely. We should renew the training of a select number of young people as elementary and secondary teachers and the opportunity to begin such training should be offered in undergraduate years prior to award of the baccalaureate in a substantive subject matter field. A large majority of regular faculty in the School should be involved in this training. ... In short, we should be heavily involved in training and research which bears a close relationship to what happens in actuality.

The School of Education strongly supports the Chancellor's statement. We have been moving to implement and expand selected pre-service and in-service teacher education programs at the School.

At present, 91 students (25 per cent of the School's total enrollment) are in basic or advanced teaching credential or dual credential/Master's programs. During the 1970s, credential enrollments plummeted from nearly 400 students in 1972 to the 91 today as a result of the factors noted earlier. As a result of the School's increased commitment to teacher training and external recognition of areas of teacher shortages, however, we have begun a careful rebuilding of teacher education programs. Although doctoral programs will remain our primary emphasis, we project that credential and credential-Master's enrollments will increase to perhaps 40 percent of total enrollments by 1986.

The quality of our teaching credential students is quite high. National statistics regarding the relatively low academic ability and achievement of students entering teaching do not hold for either the University or the Berkeley campus. Applicants to teaching credential programs at Berkeley must have a minimum 3.0 grade point average, and all current credential students have Bachelor's degrees in academic fields outside education.

Within teacher education, the School's emphasis is on programs which (a) focus on high-need areas and (b) are experimental in design. Over the next few years, our greatest credential expansion is planned to be in the area of mathematics and science education, the area where the greatest shortage of qualified teachers now exists. Over the past two years, the number of students seeking single-subject teaching credentials in science education has nearly tripled from five to 14 students, and applications for next year are running high, as students learn of job possibilities and become more familiar with the School's commitment in this area. Only three students are currently seeking a credential in mathematics education, however, in part because the School lost its last Senate faculty expert in mathematics education a year ago. We expect to begin remedying this need by next fall, as we are now recruiting for a Senate faculty position in mathematics education. In a second area of continuing critical need, that of reading, writing and language instruction, 27 students are currently enrolled for basic or advanced teaching credentials.

The School has developed several innovative model programs in teacher education. The Developmental Teacher Education Program, begun in 1979, is a two-year program leading to the M.A. as well as to appropriate credentials for both pre-service and in-service teachers. Its fundamental premise is that teachers can become more effective by acquiring a better understanding of their students and of themselves as developing individuals. In order to understand the processes of development in children and to analyze and develop curricula appropriate to student developmental levels, a substantial part of both the pre-service and in-service components is devoted to learning and applying theories of human development. For the pre-service teachers, the program provides multiple teaching placements with children of different ages, exposes them to experienced teachers through core seminars which both groups attend and places some with master teachers who are program graduates.

The Educational Research and its Applications (ERA) Program leads to a teaching credential and an M.A. or advanced graduate units. The ERA program provides training for both elementary school teaching and secondary school teaching in science or mathematics. Students receive instruction on campus two days per week and work in a student teaching position three days per week. Through its emphasis on educational research, the program is designed to develop teachers who are also "instructional researchers" and who will apply educational research findings to the classroom. The program works closely with three selected school districts. Many program graduates have been placed in these districts, where they now serve as supervising teachers for subsequent student teachers, providing both continuity and strong links between the School and the field.

The Advanced Reading and Language Leadership Program leads to the Reading Specialist Credential and an M.A. The ARLL program provides advanced training for experienced teachers in reading and the language arts. Students receive instruction on campus two days a week and participate in various field experience activities, including internship placements with reading specialists in local school districts and observation visits to exemplary reading and language arts programs in the Bay Area. The program emphasizes the application of theory in the design of curricula. Many of the program graduates have become leaders in the field of curriculum design.

More than any other experimental teacher education program, the Bay Area Writing Project (BAWP) has had an enormous impact on practice throughout California and the nation. Primarily an in-service program -- although it also has a pre-service credential component at Berkeley -- BAWP has led the way in developing the abilities of teachers to improve students' composition skills at all levels, elementary through University. Through the program, teachers experiment with the teaching of writing in their own classrooms and learn approaches adapted to a broad spectrum of students and school settings. The in-service component conducts an invitational summer institute on the Berkeley campus, an open program on campus, and ten-session staff development programs in many school districts. The pre-service component prepares teacher candidates to teach all aspects of the secondary school English curriculum but denotes particular emphasis to the teaching of writing. Students participate in a three-week writing institute modeled after the in-service summer program. An important aspect of the Bay Area Writing Project is that it is a cooperative School-teacher activity which uses experienced classroom teachers to teach other teachers.

The Bay Area Mathematics Project (BAMP), established in 1983, is built on the successful model of BAWP. At present, it is restricted to an in-service program which conducts a summer institute for mathematics teachers ranging from those in elementary schools to those who teach courses for the first two years of college. Based in the School, one of its special features is its collaboration with Berkeley's Lawrence Hall of Science, other campus mathematics educators, Teacher Education and Computer Centers and other educational institutions.

The School also conducts other in-service summer institutes for teachers and other educators. (See sections on the School's advanced professional training and service missions, p. 36ff below.)

Three major problems confront the School in its efforts to strengthen teacher education:

1) continued low (even though improving) enrollments in critical subject areas;

2) low minority enrollments in teaching credential programs; and

3) lack of involvement in teacher education by many Senate faculty members.

These problems, which exist in other graduate schools of education as well, are all exacerbated by the low relative status of public school teaching in our society and the corresponding lack of prestige of teacher education in a major research university.

Low Enrollment in Critical Subjects. We have already noted the critical needs for mathematics and science teachers, as well as for bilingual and special education teachers. Although reports of the teacher shortages in these areas have already helped bring in some new students to credential programs, the supply will fall far short of demand so long as individuals with the same education can get far higher salaries in industry, with more prestige and better working conditions. There are two responses to this problem that we can make. First, we can propose possible solutions to the problem and encourage debate about their implications. Members of the School have been instrumental in setting forth some of the policy options, such as incentives for teacher in-service retraining in critical areas, loan programs with "forgiveness" provisions for those who teach, and differential pay for teachers in high-demand subjects. As an institution, the University should join with other educational leaders to support policies which would increase the number of qualified teachers in the classroom -- higher salaries, more flexible credentialing requirements and consideration of differential pay and reduced work loads for those who teach in especially demanding fields -- without, at the same time, depressing the professionalization of teaching and re-introducing pay differentials that are strongly tied to gender.

Second, we should use the University's own resources to reduce the shortage of teachers in critical areas. One way to do so would be for the University to encourage and support its own advanced, pedagogically qualified graduate students in mathematics, science and technology to take on part-time teaching assignments in the secondary schools. Such a step not only would reduce the shortage of teachers with competence in mathematics and science, it would also quicken the flow of knowledge about scientific developments to the schools and provide valuable teaching experience for the graduate students. Most of the costs for such a program should be paid by the participating school districts from funds currently being used to pay the salaries of teachers unqualified in these subject areas. Although recent changes in California's education laws (especially Senate Bill 813 of 1983) have eased licensing requirements for some types of school instructors ("teacher trainees"), the proposed program would still require changes in the regulations before it could be implemented. Schools of education would coordinate such programs and provide concurrent training assistance and supervision for the graduate students.

Low Minority Enrollments. Within the next decade a majority of the students in California's public schools will be members of ethnic minority groups. Even today, more than one-fourth of public school pupils in California are Hispanic (Tables 2 and 3). Because of this, we are particularly concerned that no Black students and only one Hispanic student are currently enrolled for a basic or advanced teaching credential in the School. As career options for minority students have expanded, an increasing percentage of University students have chosen careers outside of education. Yet, if we are to train teachers for California's changing classrooms, we must find ways to recruit more minority students to teacher education.

Low Involvement of Senate Faculty. Within status-insecure schools of education in research universities, teacher education tends to occupy an even lower status. The preparation of future teachers provides less status and reward than the preparation of future researchers or advanced professionals (Glazer, 1974). Because they are frequently selected on the basis of scholarship alone, education faculty members may have little experience in public school teaching. The result is that, at our School of Education, while some Senate faculty members are deeply involved in the education and training of aspiring teachers, the majority of teacher training is undertaken by non-Senate Supervisors of Teacher Education. These individuals often have both extensive professional experience in the schools and continuing contacts with school personnel, but the research expertise of other faculty members in the School is too frequently unconnected with professional education. We do not know the answer to the problem of bridging the gap between a largely research-oriented faculty and the need for excellent teacher education programs based on both practice and research. We are committed, however, to increasing Senate faculty involvement in planning and teaching courses for teaching credential students. A committee of the faculty is currently examining the issue of teacher education and the appropriate roles of Senate and non-Senate faculty.

The School is planning or considering a number of activities to improve teacher education at Berkeley. These include: concentrating secondary-level placements for student teachers in selected "feeder" high schools, as a means to multiply the impact of teaching improvements on the preparation of those entering the University; revising state licensing regulations to permit more experimental and flexible programs that utilize Berkeley campus strengths; and developing in-service programs on the model of BAWP and BAMP which utilize experienced teachers as colleagues in the learning process.

Unmet needs exist. To integrate better teacher training with scholarly research, we require additional faculty members with expertise and interest in both research and teaching, most especially in mathematics education but also in the areas of science, technology and literacy education. In addition, recognizing that most of our Senate faculty will continue to devote most of their efforts to research and doctoral training, the School will need additional Supervisors of Teacher Education for the projected growth of credential students. To help bridge the gap between the School and the field, we need to employ school personnel on a temporary basis as consultants to and participants in our teacher education programs.

B. Advanced Professional Education

A number of problems and criticisms concerning the Ed.D. degree (and the problematic status of all professional doctoral programs at Berkeley) exist: its perceived second-class status both at Berkeley and in some sectors of the field, the difficulty in maintaining a sharp differentiation between Ed.D. and Ph.D. programs, low enrollments, and charges (not based on facts) of low quality. Accordingly, the School of Education seriously considered phasing out its Ed.D. programs. The 1976 Cheit Report, in fact, recommended this step, if the Ed.D. could not be significantly distinguished from the Ph.D. Both the 1978 report of the campus ad hoc Committee to Review the Graduate Program in the School of Education (Berger Committee) and the 1981 report of the campus Commission on Education (Smelser Commission) listed withdrawal from professional doctoral training as an option, although neither report actually recommended it. Finally, Stephen Weiner, then Acting Dean of the School of Education, recommended in a 1981 report to the Chancellor that the School discontinue use of the Ed.D., but that it not abandon its professional mission.

We believe, however, that eliminating the Ed.D. -- or, more drastically still, abandoning our mission in advanced professional training -- would give an erroneous message and suggest an inappropriate answer to the continuing dilemma of providing professional training within an arts and sciences-oriented research university. The School of Education is strongly committed to the preparation of educational leaders. We do not intend to abandon this mission, nor do we feel practitioners can adequately be served by Ph.D. programs. Instead, the School of Education is committed to improving leadership for elementary and secondary education by:

1) strengthening practitioner-oriented Ed.D. programs and clarifying the distinctions between Ed.D. and Ph.D. programs and objectives;

2) making the Ed.D. the expected degree of most or all doctoral students in programs which, in fact, largely serve professionals;

3) focusing on the preparation of higher-level administrators and specialists in our professional doctoral programs; and

4) developing a more coherent and context-based approach to in-service education for administrators.

At present, the School provides advanced professional training primarily through specialist credentials and in doctoral programs in school administration, program evaluation, mathematics, science and technology education, language, reading and writing, and school psychology. We are still training some professionals in college and university administration (particularly community college administration), but lack of sufficient authorizations to replace retiring faculty members has forced us to stop admissions to this program. We hope that the creation of a joint program with San Francisco State and the Davis campus will permit us to resume and increase the quality of our offerings. Graduates of these professional doctoral programs are employed as school superintendents, statewide administrators and analysts, curriculum developers and evaluators, program evaluators, directors of training programs in industry or for community-based organizations, and many other positions. In addition, the School offers a reading specialist credential and an administrative services credential. This latter program is now being adapted to meet the new two-stage requirements for the certification of school administrators.

When possible, we have established close collaborative ties with other relevant professional schools and academic departments. A good example is the new Berkeley Academic Program in Public Management. Created in 1983, this program links approximately 60 faculty members on campus, in eight professional schools and one academic department, offering programs in public sector management. A set of core courses has been created and the School of Education is providing three faculty members to teach some of these courses. This linkage provides an opportunity to enhance our own offerings in administration and management and to pool resources with other units to complement deficiencies and achieve more than each of us could achieve alone.

Not all of the students in doctoral programs who have professional objectives are pursuing a professional doctorate. The perceived lower status of the Ed.D. -- and the lack of major differences in the requirements and curriculum for Ed.D. and Ph.D. programs -- has persuaded many professionals to seek the Ph.D., even though it may not be fully appropriate for their needs. In fact, less than nine percent of currently enrolled doctoral students are pursuing the Ed.D. Most of these students are in three programs: educational administration, mathematics, science and technology, and language, reading and writing (see

Table 5). We have, however, begun to encourage new enrollments in Ed.D. programs and to revise the Ed.D. programs themselves.

To succeed in this attempt, we believe some major changes must be instituted. A faculty committee is currently preparing a report on revised requirements and elements of an Ed.D. degree. Among the revisions being considered are:

1) Alternatives to the traditional dissertation which would require demonstration of capabilities that contribute to the improvement of educational practice. Instead of a single lengthy dissertation monograph, the Ed.D. student might complete a project, or perhaps a series of shorter projects, which would be directly applied to educational problems and which might, in many cases, deliberately utilize situations at the student's current place of employment. Projects might include, for example, a program evaluation, implementation of a new policy, program or procedure, or field testing of a new curriculum.

2) Increased emphasis on field-based work. One possibility is to require what Cremin (1978) calls a "rotating internship" through a variety of educational settings, in order to equip professionals to understand other aspects of the educational system and to prepare them to work in different positions or settings.

3) An expanded core of common learning (breadth requirements). For example, we are considering requiring all Ed.D. students, regardless of their career objectives, to pass a common written examination covering basic knowledge of human learning, methods and modes of instruction and the nature of educational institutions.

Several critical issues and problems remain: What should be the primary objectives of professional doctoral study in the School and in particular divisions and doctoral programs? What kinds of professionals should be served (e.g., "mentor teachers" and instructors in undergraduate training institutions, as well as administrators, evaluators, etc.)? Since education is an applied field, what common elements should Ed.D. and Ph.D. programs contain? Given the primary research orientation of the School's faculty, do we need faculty with different types of skills if we are to serve professional students better? Should admission requirements for Ed.D. students be revised? Should Ph.D. students in a professional school have more direct exposure to the operations of educational institutions?

The Ed.D. should be the expected doctoral degree for most doctoral students in programs which primarily serve professionals. If the Ed.D. were the expected and usual degree, it would no longer carry the same stigma and students could pursue programs more appropriate to their needs. We are considering making the Ed.D. the normative doctoral degree for students in school administration and program evaluation. It might also be appropriate in certain other programs. Students in these programs might still pursue the Ph.D., but doing so would require a strong rationale -- such as intention to teach and do research in school administration in a university setting.

While doctoral programs in the School will and should focus on higher-level administrators and other specialists, the School also has responsibility to provide greater in-service education to other professionals, particularly school-site administrators, since they are central to improving the performance and effectiveness of our schools. For the past four years, the School has offered a Summer Institute for School Administrators, which brings such professionals together to discuss common problems and to learn from each other and from experts both within and outside the School. Further School initiatives to assist school administrators are described under the section on the School's service to the field(p. 47ff below).

ADVANCEMENT OF KNOWLEDGE AND TRAINING OF SCHOLARS

Advancement of Knowledge

To quote again from Chancellor Heyman's 1982 statement on the School's missions: "A substantial component of faculty research ... should be occurring in [the primary and secondary] schools." In the past, the School's faculty members have been criticized for giving inadequate attention in their research to the problems of teaching and learning in the schools. They have also been criticized for being isolated in their separate fields of interest and thus failing to reinforce one another's efforts. Some faculty research projects have contributed significantly to understanding and improving educational practice and have involved other researchers both within and outside the School, but not enough have done so.

The School is moving to encourage such efforts. We are developing mechanisms to:

1) encourage research germane to educational problems and to disseminate such research findings more widely;

2) increase input from professionals in the field on needed research and on the appropriateness of current research and proposed solutions to educational problems; and

3) strengthen linkages both among faculty, students and programs within the School and between those in the School and those in other units on campus working on educational issues.

An exemplary mechanism for achieving these objectives is our new bi-weekly University Seminar on Mathematics, Science and Technology Education. There are other mechanisms as well. We will describe these shortly. First, however, we will describe the range of current faculty research in the field of elementary and secondary education.

Faculty members in the School are conducting a wide range of research projects, scholarly inquiries and demonstration projects in the field of elementary and secondary education. For the 1983-84 fiscal year, approximately $2.5 million came to the School from various government agencies and philanthropic foundations. This figure does not, of course, show the total funding for these projects, many of which are multi-year, nor does it include extramural funding awarded to Education faculty members but administered by units other than the School of Education. (For example, some faculty members have had grants administered by the campus Institutes of Human Development and Human Learning, the Far West Regional Laboratories and other agencies.) It also excludes faculty research and inquiry conducted without extramural funding. The largest amount of funding for research and demonstration projects in the School is for activities of the Bay Area Writing Project, which received $1.1 million from state and other sources.

Individual faculty members received funding for projects which covered topics such as policy analyses of California education programs and policies, the acquisition of written language, the development of video skills and spatial-visual skills in pre-adolescent girls, and substance use and abuse in hyperactive children. Table 7 lists currently funded research projects of faculty in the School.

Many of these projects have direct implications for school practice and improvement. The major thrusts of such research by faculty in the School are in five areas:

1) the acquisition of reading, writing and language, including bilingual education, the family and social contexts of language learning, and the nature of the writing process;

2) the development of problem-solving skills in mathematics and science, and the application of technology to learning and educational settings;

3) policy research on the structure, equity and changing political, fiscal and legal environments of educational systems;

4) the application of psychological theory and methodology to understanding the processes and development of learning, including cognitive and social development, and individual differences that affect learning; and

5) the application of humanistic and social science disciplines to evaluate education and educational values in larger social and historical contexts.

A few examples can indicate the scope, diversity and importance to educational practice of research being conducted in these areas:

- Acquisition of Written Language. Sarah Warshauer Freedman (Education), principal investigator, and Miles Myers (Education), associate project director, are studying the role of teacher responses in student acquisition of written language. The project will include a large-scale national survey of the response practices of excellent writing teachers in U.S. public schools and the effects of different response practices on student perceptions of their writing development. It will also include observational studies in the classrooms of outstanding writing teachers in the San Francisco Bay Area. The findings will improve our understanding of a critical aspect of how teachers teach writing and how expository writing skills develop. The results should therefore provide information to teachers about how to promote the development of written language, as well as information to researchers interested in the acquisition of written language in the classroom and the role of teacher response in the acquisition process.

- Research in Second Language Acquisition. Lily Wong Fillmore (Education), together with co-principal investigators Susan Ervin-Tripp (Psychology) and Paul Ammon (Education) and co-investigator Barry McLaughlin (Psychology, UC

Santa Cruz), has been involved during the past several years in two related research studies of second language learning in elementary school students. Both studies deal with the problem posed by the large numbers of students in U.S. schools (currently 1.4 million) who do not speak English well enough to participate effectively in the classroom. Individuals vary greatly in how fast and how well they learn a new language. Both studies address different aspects of the same research question: What are the sources of variation in how easily and well individuals learn English as a second language? Ultimately, the goal of both studies is practical: to determine whether we can predict which learners will have difficulty learning English and what sort of instructional assistance schools might provide to enable these students to learn English more successfully. Also in the area of bilingual education, Donald Hansen (Education) has just completed a study of classroom observations and home interviews of Spanish- and Chinese-speaking students. The research was funded by the federal government to inform Congress about whether to continue or modify legislation in bilingual education.

- Cognitive Principles for Instructional Design in Sciences. Frederick Reif (Physics and Education), with Joan Heller (SESAME), is conducting a study to formulate and test instructional principles useful for teaching complex scientific intellectual skills. Such principles will be based on an understanding of the underlying thought processes of a student before instruction, analysis of the thought processes and forms of knowledge leading to intellectual performance, and a derived model of a learning process whereby the student may achieve good performance. Selected aspects of these instructional principles will be elaborated and tested -- e.g., teaching an effective understanding of newly encountered scientific concepts, teaching a complex procedure for describing physics problems in useful form and teaching efficiently the use of a word processor.

- Policy Analysis for California Education (PACE). James Guthrie (Education) and Michael Kirst (Education, Stanford) are co-directing a multi-year project, funded by the Hewlett Foundation, to provide research, information and policy analyses regarding state education policies with respect to both programs that have been enacted and new proposals for reform. Project agenda will stem in part from suggestions by public officials and professional education representatives and will evolve as reform ideas and new public policy issues surface. Among the studies currently being initiated or underway at Berkeley are ones of teacher training and certification in selected states, administrator training supply and demand in California, teacher dismissal patterns, teacher salaries, secondary school vocational education, high school counseling, secondary school curriculum requirements, high school accreditation and statewide education data collection. In addition to Professor Guthrie, other faculty members in the School who are currently directing these PACE studies include Charles Benson, Nadine Lambert, Carole Swain and David Girard. A number of doctoral students are also being employed on the project. Because one of PACE's goals is to promote exchange of ideas and information among public officials, educators and academic researchers, PACE will hold regular seminars for members of the groups.

- Training in the Prevention of Mental Disorders. Nadine Lambert (Education) is principal investigator of a program designed to promote mental health in elementary school children. A number of other researchers and faculty members both from the School of Education and from other institutions and agencies are participating in the project. Those from the School include Carolyn Hartsough, Carole Swain, Eli Bower and Vard Kazanjian. The project involves staff development for elementary school teachers to measure classroom functioning of children, to identify children's problems for which classroom interventions need to be developed, and to implement and study the efficacy of these interventions. The results of the research will produce models for school mental health service delivery systems, including proposals for pre-service and in-service training of teachers, school resource personnel and administrators, as well as estimates of the costs of the delivery system models.

To encourage further increases in research oriented to educational problems and practice, the School has drafted new guidelines for faculty appointment and promotion which explicitly state the expectation that a faculty member's work have direct or potential application to the field. The guidelines explicate alternative ways in which faculty members in the School can demonstrate excellence in research and creative work -- e.g., through basic research, applied research anchored in theory and taking a variety of forms, collaborative research efforts and creative professional work (Appendix). The Dean's Office has also begun to improve the collection and circulation of information on research grant and contract funding areas, to make faculty more aware of funding possibilities in both basic and applied research. The Spencer Foundation recently awarded the Dean $150,000 for support of junior faculty members interested in the study of education.

One of the most promising mechanisms for encouraging and disseminating research applied to educational problems and for strengthening the interaction between researchers and practitioners is the new University Seminar on Mathematics, Science and Technology Education. The School of Education, the Lawrence Hall of Science, the Institute of Human Development and the College of Engineering are co-sponsoring the seminar, the first session of which was held January 18. The seminar brings together natural scientists, social scientists, educational researchers and school and community college teachers and administrators to discuss mutual concerns and share perspectives on how to improve the quality and effectiveness of education in mathematics, science and technology. Seminar participants and invited speakers discuss a number of topics of particular importance and interest, including the recommendations of the National Commission on Excellence in Education, chemistry education for the 1990s, models for linking schools and research universities and computers in education.

The seminar should produce several outcomes, including;

1) a synthesis of what we do know about how to teach science and mathematics in precollegiate education and what we do not know, in order to stimulate needed research;

2) a greater understanding and appreciation, especially on the part of the University's scientists and mathematicians, of the gap between what we want to happen in the nation's schools and what will continue to occur unless the mathematics and scientific professoriate play a more direct and informed role in precollegiate science and mathematics reform efforts;

3) an overview of recent advances in the use of technology-assisted instruction;

4) a deeper appreciation of the uses, limitations, social costs and pedagogical consequences of increased uses of technology in elementary and secondary education -- leading, we would hope, to more research on these issues by Berkeley professors from various disciplines and perspectives; and

5) a proposal for submission to the National Institute of Education to operate a regional educational laboratory and research center in mathematics and science education.

An overarching objective of the seminar is the establishment and maintenance of effective working partnerships between the schools and the University. To this end, subgroups of seminar participants are being formed to discuss and plan educational improvements in particular mathematics, science or technology areas.

Because building stronger linkages with other campus units and researchers interested in education is critical, the School has taken a number of steps to strengthen interactions. In addition to the joint sponsorship of the new University seminar by the School and several other campus units, the School has jointly sponsored seminars with the Center for Studies in Higher Education and has been working to increase coordination with the Lawrence Hall of Science. Our ties with SESAME are close. The School has also persuaded several distinguished faculty members in other departments to accept 0% FTE appointments in the School. These appointments include Glenn Seaborg (University Professor of Chemistry and Acting Director of the Lawrence Hall of Science), Wallace Chafe and Robin Lakoff (both of Linguistics), Leon Henkin (Mathematics), Reginald Jones (Afro-American Studies), Robert Karplus and Frederick Reif (both of Physics), John Ogbu (Anthropology) and Richard White (Electrical Engineering and Computer Sciences). Nor are these appointments merely symbolic. These individuals have contributed substantial efforts to joint projects with the School, research studies, advising, administration and faculty recruitment. A number of School faculty members have developed close ties with other departments -- Educational Psychology faculty members with the Psychology Department, Language and Literacy faculty with Linguistics, Anthropology, Optometry, English and Subject A, other faculty members with Economics, Public Health, History, Philosophy and other departments. The School has also encouraged faculty members to develop courses offered by other departments and addressed primarily to Berkeley undergraduates, some of whom may consider teaching as a career and all of whom should be better-informed citizens.

Training of Researchers and Scholars

The training of researchers and scholars to advance and disseminate knowledge about education must be closely linked to faculty research. In the School of Education, research training is provided through a number of specialized

Ph.D. programs. Like research, research training in education must be linked to an understanding of and application to educational practice and must better integrate the various fields which impinge on educational practice.

The majority of students in the School are in Ph.D. programs. Graduates of the School's Ph.D. programs are college and university instructors, researchers and analysts for governmental agencies, research institutes and foundations, legislative analysts and consultants, research psychologists and community college presidents. One is President of the University of California. A number are employed as educational administrators and other practitioners.

Ph.D. programs in the School face at least four major problems and unmet needs. First, there are too few faculty members in the areas we have identified as having especially high priority, particularly in mathematics, science and technology, and in language and literacy. Expected new appointments will make substantial strides toward filling the gap in mathematics and science, but we still will be unable to achieve essential quality and comprehensiveness of programs in these areas unless we receive additional appointments.

Second, some Ph.D. students with professional objectives would probably be more appropriately placed in Ed.D. programs, if Ed.D. programs were revised to fit better with professional objectives. For this reason, as noted earlier (p. 36ff above), we are currently undertaking a review of Ph.D. and Ed.D. programs and requirements in order to differentiate them more clearly. Already the Division of Educational Administration and Evaluation has revised its curriculum to differentiate Ed.D. and Ph.D. programs more sharply.

Third, conversely, because education is an applied field, the training of educational researchers should not be conducted in isolation from practitioners or practical problems. We are therefore identifying common areas of learning with which both research- and practice-oriented doctoral students should be familiar and developing other means to ensure that those preparing for research and college teaching positions receive adequate exposure to the field.

Fourth, research training in education often is too highly specialized. Many Ph.D. students in the School take relatively few courses outside their own areas of specialization, either within the School or in a variety of other departments on campus. A faculty committee is now developing a revised core curriculum for doctoral students to meet a part of the need for breadth and integration of knowledge in education. To strengthen the interaction among related fields of study, we are considering steps to encourage Education students to take more courses in other divisions in the School and in other departments and to stimulate students from departments outside Education to take courses in the School.

SERVICE TO THE FIELD

In addition to a dedication to research and professional development, the School of Education has a particular commitment to improve the quality of formal schooling. While this commitment informs the research and degree programs described above, it is also reflected in a range of demonstration service projects designed to integrate scholarship with service to schools and the education profession.

The range and strength of these programs underline the fact that integration of scholarship with service is a central concern of the School of Education. This concern is reflected in three related developments. First, a set of service policies has been articulated which reflects the distinctive needs and resources of a professional school of education at a major research university. Second, within the guidelines of this policy, a number of vital demonstration projects have been developed and administered for the benefit of both scholars and professionals in the field. And, third, based on the research and practical contributions of these existing projects, an integrated set of new projects is being planned for the coming years.

Service Policies

Public concern about the quality of schooling has placed increased demands on college and university schools of education. Such demands create new opportunities for improving the education profession, but they also increase the importance of service policies which can insure the strategic use of limited university resources in designing and implementing school reforms. Our response to these multiple challenges has been to develop a set of service policies for the School of Education which reflects its distinctive position on the Berkeley campus and within the University of California.

In terms of administration, the policies we have developed stipulate that service programs sponsored by the School of Education should:

1) provide unique opportunities to link scholarship with service and embrace explicitly the integration of theory and practice;

2) complement the research interests and strengths of School faculty members and link these to scholars conducting related work in other departments;

3) provide professional training opportunities for graduate students;

4) reflect intellectual content of high quality;

5) achieve identifiable outcomes and generate documentation appropriate to systematic assessment; and

6) be self-supporting.

In terms of outcomes, service projects sponsored by the School of Education should also:

7) encourage institutional and structural changes which can enhance effectiveness and educational quality within the teaching profession, at the school site, within the administration of school districts, and in terms of state and national policy; and

8) enhance co-participation by scholars and practitioners in the development of long-term school-University partnerships.

Our present service policy also includes three exclusionary provisions:

9) neither the School of Education nor the University should engage in direct service efforts the sole outcome of which is to "recreate" the schools under University administration, nor should service efforts reflect an adversarial relationship with systems of public or private schooling;

10) school-sponsored service activities must not encourage unrealistic expectations among school professionals or the general public about the kind and scope of assistance the University can provide;

11) while collaboration with other colleges and universities is to be encouraged, the School of Education should not dilute its resources through investment in programs which can be easily duplicated by other institutions.

These policies outline our principles for encouraging improvements in the education profession and in the schools. They also identify constraints which limit the kinds of service programs the School can productively sponsor. While the policies themselves are informed by the School's own history of service to the education profession, they also reflect our close reading of recent literature about school improvement efforts.

Taken together, the policies we have developed reflect a conception of service tied closely to the larger missions of the University and to the distinctive resources of the School of Education at Berkeley. Within this context, our particular service strategy is directed toward improvements in three principal arenas: at the school site, within the educational profession and within those sectors of government and the polity which establish policies and guidelines for formal schooling. To show how these principles and objectives apply in practice, we next describe our existing service activities in terms of their clients and their future development within the School.

Current Demonstration Service Projects

The School of Education currently sponsors demonstration service projects addressed to four different categories of schooling participants: teachers, school site administrators, students, and educational policy makers. Through several other programs, the School of Education also identifies as one of its legitimate clients those educators teaching on the Berkeley campus.

1) Teachers. Service to school teachers is provided through several credential programs currently administered by the School of Education. These are discussed in more detail in the previous section on Teacher Education. The School also administers a wide range of in-service demonstration projects, including the renowned Bay Area Writing Project, which has now expanded to the California Writing Project and the National Writing Project, and the Bay Area Mathematics Project. Through the Summer Program for Educators, formerly called

the Summer Program for Teachers, the School of Education also provides a number of valuable courses which teachers and other professionals can take for enrichment and professional development during the summer months.

2) Administrators. The School of Education currently offers an Administrative Services Credential Program which has proved extremely valuable for school site administrators. This credential program is complemented by the annual summer Institute for School Administrators, as well as by faculty consultation with individual administrators at the school site.

3) Students. Two programs administered by the School currently provide direct service to elementary and secondary school students in surrounding school districts. The UCB Gifted Program is designed to guide and encourage gifted students by providing them services not currently available in their own schools. The Gifted Program offers a series of exciting and challenging summer classes to over 300 young students from the seventh through tenth grades. The program also provides counseling support for the parents of gifted children as well as Saturday classes and workshops during the regular school year. The Educational Field Studies program is an undergraduate course listing (Education 197) within the School of Education through which Berkeley students are placed as tutors and teaching assistants in surrounding schools. Students are supervised both by Berkeley faculty members and by professionals in the field. The program is designed to integrate intellectual inquiry, service to the schools and the professional development of undergraduates as effective teachers. It enrolls as many as 400 students a term.

4) Policy makers. Many faculty members in the School of Education work actively with professionals in the field to clarify and examine educational policy issues. While much of this work is cast within the context of individual faculty research projects, two larger projects discussed earlier -- the Policy Analysis for California Education project (PACE) (p. 42) and the University Seminar on Mathematics, Science and Technology Education (p. 44) -- are efforts which hold exciting promise for applying research knowledge to public policy issues and bringing together researchers, practitioners and policy makers.

A second Social Policy seminar has been organized cooperatively with the School of Social Welfare, the School of Public Health, and the Department of

City and Regional Planning. This seminar is designed to involve state legislators and administrators with University faculty in a discussion of the possibility of improving social service delivery and finding ways of integrating social service programs in the field.

5) The Berkeley campus. Several programs administered by the School of Education have served other educators working on the Berkeley campus. Through one section of the Educational Field Studies course (Education 197), for example, students have received clinical supervision in subject area tutoring as administered by the campus Student Learning Center. The Learning Center has also called upon the Learning from Text project, a research and demonstration service project directed by faculty in the School, to instruct special-admit students participating in the Summer Bridge Program and to design reading laboratory sections to complement large lecture courses in several academic departments.

The Bay Area Writing Project has worked closely with faculty and instructors in the campus Subject A composition program, and a special section of Writing Project activities has been designed for teachers from the surrounding schools who are also associated with the University's "Partnership" program. In these and other ways, personnel from the Writing Project have also been deeply involved with efforts on the campus to improve the instruction of writing for Berkeley undergraduates and a parallel effort to improve the ability of teaching assistants to provide high-quality instruction to Berkeley students in the area of composition.

Many of these efforts draw upon a close working relationship between the School of Education and the Office for Undergraduate Affairs, through which policies and programs within the School can complement in practice those of the Lawrence Hall of Science, the Office of Relations with Schools and the Office of Admissions and Records.

Revised Projects

The preceding service efforts reflect an array of strong, field-tested demonstration projects. Building on experience gained from these efforts, the School of Education is now revising its service activities and developing new initiatives in response to current opportunities for improving the schools and the education profession. These revisions reflect two governing principles: (1) coordination with research and teaching missions for enhanced effectiveness and (2) partnership with surrounding schools.

The UCB Gifted Program, for example, was initially designed solely to serve students and their parents. Through its summer classes, however, it has also provided challenging instructional assignments for several dozen teachers from surrounding schools. Present plans call for the program to complement service to students and their parents with a formal program of professional development for their teachers, and with projects of faculty research. We are also developing a summer course for school teachers which would make use of the program as a learning laboratory. In all these regards, our intent is to coordinate the Gifted Program with other service and teaching efforts, such as the Summer Program for Educators, and to build explicit linkages between the program and the surrounding schools.

Parallel revisions have been proposed for Educational Field Studies. In the past, individual sections of this course were organized around the field sites in which students serve as tutors and teaching assistants. Current plans, however, call for sections to be developed around instructional issues in particular areas -- science, mathematics, composition, English as a second language, or social studies. This new format will facilitate focused, pre-service training as well as provide a closer connection to the research interests of faculty members in the School. We are also working to orient school teachers involved in our other service activities to the effective use of student volunteers in the classroom. This kind of coordination should enhance the contributions which students can make in the schools as well as strengthen our relationships with the participating school teachers.

The principles of coordination and partnership also have two important implications for the other service programs identified above. First, an effort is currently underway to coordinate demonstration service projects of the School of Education with other school service projects sponsored by the Berkeley campus. This coordination has been initiated jointly by the Dean of the School and the Vice Chancellor for Undergraduate Affairs. Immediate objectives of this effort include the following:

1) cooperation to maximize the use of limited resources in the administration of summer programs and school service efforts;

2) development of a shared data base and data management system among school service programs administered by the Berkeley campus;

3) coordination of research and demonstration service projects with efforts to prepare a diverse population of students for study at Berkeley and the larger University;

4) coordination of efforts to secure extramural funding for school service projects; and

5) improved understanding of the schooling process and identification of effective strategies for University co-participation with surrounding schools.

These objectives are currently being pursued through formation of a school service network on the Berkeley campus. The Dean of the School of Education and the Vice Chancellor for Undergraduate Affairs have prepared a charge to this network and have allocated personnel from their respective offices to provide staff support for network activities.

Second, the principles of coordination and partnership are being applied to the administration of University-sponsored service programs at school sites. Toward this end, the School of Education is working with school-site personnel to develop policies and plans appropriate to the present range of University-sponsored services. In some cases, this effort involves sponsorship by the School of Education of meetings at the school site in which service program personnel can direct their collective resources toward practical solutions of particular educational problems. In other cases, however, they take the form of school improvement projects jointly sponsored by the School of Education and a particular school district, projects which bring to bear a range of existing service activities within the context of strategic planning at school sites.

New Initiatives

In addition to their value in revising existing service programs, principles of coordination and partnership are essential to planning new initiatives. For example, with the support of the Hewlett Foundation, we are currently engaged in the planning phase of a major school improvement project through which we hope to work with three high schools, their feeder junior high schools and a sample of elementary schools within the same districts. The project we are developing focuses on three different subject areas (mathematics, science and language) as well as on essential school functions related to administration, counseling and instruction. It builds on the existing service projects identified above -- for students, teachers, administrators and policy makers -- but it attempts to integrate activities of each project within a strategic plan for enhanced effectiveness at the school site.

Planning, administration and assessment of this project will both encourage and require a close working partnership between the University and participating school districts. While our existing service programs provide a wide range of contacts upon which such a partnership can be established, our intent is to go beyond these to develop a long-term working relationship with a few carefully selected school districts. As we undertake new initiatives of more limited scope, some of which are described below, our formal partnership with these schools will continue to serve as a valuable resource for program design, implementation and dissemination.

While the school improvement project emphasizes coordination with school sites, another new initiative addresses coordination on the Berkeley campus. We have noted, for example, that a number of University-sponsored school service projects currently employ on a part-time basis talented teachers from the surrounding schools. At present, these teachers are not identified by the University in any special way, nor are University resources directed toward improving their skills as change agents and instructors in the schools. While University and school personnel are cooperating to provide educational services, that cooperation itself has been treated as incidental to the administration of individual programs.

We think that this is unfortunate and that this group of teachers could be better served and, in turn, provide better service for their students, the schools and the University itself. To pursue this goal, we are working to develop a program of Partnership Fellows, through which exceptional school teachers could provide needed educational services -- particularly those related to articulation with surrounding schools -- as well as enhance their own professional development. "Fellows" selected for this program would work part time in one or more existing service programs, while at the same time they would take courses in the School of Education. They would also be oriented as a group to some of the educational issues which the campus has been trying to address in the surrounding schools (e.g., minority achievement, the improvement of science and mathematics education, the role of "master teachers," and the recruitment of a diverse and talented student body for the University system and for Berkeley in particular).

Funds to support Partnership Fellows could come from the operating budgets of service programs already in place. The number of Fellows accommodated in this manner could be increased through arrangements with the schools for crediting the difference between the teacher's regular salary and the cost of a replacement to the program itself.

After serving as Partnership Fellows, teachers would return to the schools in which they were originally employed. By maintaining contacts through a "Partnership Fellow Alumni" network, the University and the schools would be able to draw upon an organization of exceptional teachers working in the schools, an organization which, at the moment, does not exist.

Both the coordinated school improvement project and the Partnership Fellow program will generate formal alliances between the School of Education, the University and surrounding schools. These alliances, in turn, will augment both the quality and impact of a number of other service initiatives which the School is currently undertaking:

History and Social Science Curriculum Improvement Project: The CLIO PROJECT. In conjunction with Chancellor Heyman and Superintendent of Public Instruction Honig, the Graduate School of Education is planning a major program to improve the quality of instruction in history, social science and related fields in California's elementary and secondary schools. This project will bring together University-based scholars from relevant academic disciplines, professors of education, practicing educators and educational policy makers for a series of strategic planning seminars during the spring and early summer of 1984. The work of this seminar will be incorporated into four other project activities:

1) a statewide conference tentatively titled What Shall We Teach?: Restructuring the K-12 History and Social Science Curriculum, to be held August 21-23 on the Berkeley campus for scholars, teachers, textbook writers and educational administrators;

2) printing and dissemination of a conference final report with specific recommendations for curriculum improvement and reform;

3) the publication of a volume of selected essays chosen from papers and presentations commissioned by the conference; and

4) a range of follow-up activities designed to assist school personnel throughout the state in making effective use of materials and recommendations generated by the conference and the seminar.

The quality of participants and the auspices under which the CLIO PROJECT will be conducted guarantee an audience for its deliberations and recommendations at the state and national level. The project will also serve as a vehicle for initiating a "social studies" component of the School's service activities and as a model for curriculum development and instructional improvement projects in other areas (e.g., language and literacy acquisition; education for modern citizenship in mathematics, science and technology). As indicated above, design and implementation of all such projects will be enhanced at the local level through established partnerships with several surrounding schools.

Berkeley Computer Education Program. For the coming summer, we are planning a special summer institute for teachers and administrators interested in the use of microcomputers at the school site. This institute will address both instructional and administrative applications, and we expect that it will enroll participants from a wide range of school districts. To enhance implementation, we will also initiate a year-round program to integrate summer institute training with on-going consultation and assessment at selected school sites.

Arts and Humanities Program. For the summer of 1985, we are planning to sponsor an institute on the teaching of arts and humanities in the schools. This institute will be modeled on the forthcoming conference on the teaching of social science and will serve as a vehicle for initiating an arts and humanities component of the School's service program.

School Management Program. Building on the success of the existing Institute for School Administrators, we are now developing plans for a "management training" project for school principals and other school administrators. This project would include an institute on the Berkeley campus to provide intensive, structured training in technical and managerial skills. The project would also sponsor a range of activities through which school principals could develop more supportive and informative relationships with their peers, much as is now done for teachers of writing and mathematics through the Bay Area Writing and Mathematics Projects.

A California High School for Mathematics and Science. We are also exploring the possibility of developing a statewide demonstration high school for students talented or gifted in the areas of mathematics and science. A school of this nature, administered by the School of Education for the campus and the larger University, could serve both as an educational laboratory and a model of excellence. Toward this end, the school would be administered not only as an experimental setting in which curricular reforms and new instructional technologies could be continuously applied, evaluated and redesigned, but also as a training site for teachers already working in the public schools.

The administration of "laboratory schools" by University-based schools of education has a long, interesting and ambiguous history. Many of these projects can be characterized as "experiments" which failed to translate well in terms of existing school systems. Since more attention has usually been given to design of the lab school than to a strategy for implementing its contributions, this is understandable. The statewide high school we are proposing, however, would be administered as an integral part of a more general school improvement project. Our goal is not so much simply to serve a group of talented students -- worthwhile though that may be -- but to ensure that knowledge generated from an experimental high school would be applied to the critical problems faced by surrounding schools and the education profession.

Resource Requirements for Service Programs

These new and revised service efforts respond to a range of issues for which the School of Education, as a professional school of education in a major research university, must exercise leadership of a very special sort. Resources presently available to the School, however, are inadequate to ensure the quality of this leadership or to support the administrative oversight necessary to carry projects forward in a responsible manner.

All revisions of existing activities and all new initiatives have been generated out of the office of the Dean and undertaken since his appointment on April 1, 1983. As a result of resource limitations within the School and the Dean's office, critical service activities are being developed and coordinated through an already over-taxed administrative unit. New initiatives, for example, have been developed by the Dean himself and through time "borrowed" from the institutional responsibilities of the Assistant Dean for Student Services. The revision and coordination of existing service activities have been directed by a senior staff person on temporary loan from the Office for Undergraduate Affairs. In order to continue our development in the directions outlined above and insure high-quality leadership within the education profession, the School of Education will need to increase its resource base in several respects.

First, qualified faculty members must be recruited and appointed to positions which will encourage them to combine scholarship with attention to professionals in the field.

Second, provisions for appointing school personnel to work on a part-time and temporary basis within the University must be developed and formalized. We must continue to bring exemplary, practicing professionals from the field to the campus in order to reaffirm their participation in academic and professional inquiry. We need to find ways of doing this which can create working partnerships between teachers and scholars on a regular, consistent basis, such as that proposed for the Partnership Fellows program.

Third, administrative resources must be adequate to ensure that projects are well designed, coordinated with relevant agencies in the field and on the campus, and well documented for purposes of research and assessment. These resources are in addition to those required to support individual service projects themselves, and they are essential to the administration of coordinated school improvement projects such as the one we are currently developing in partnership with several surrounding school districts.

Fourth, we need the moral and political commitment of the University -- expressed in ways both public and private -- that service to the education profession is an explicit component of its institutional mission. In the short run, this commitment can be affirmed through statements of purpose and intent, but, in the long run, the visibility of our deeds -- manifest in programs such as those outlined above -- will carry the weight that words alone cannot.

We are convinced that the University of California should support efforts to improve the quality of formal schooling in the State of California. The manner in which this support is provided may vary from campus to campus, but it should be a central, stable and on-going feature of both the University's missions and its annual budget requests. By making this objective explicit, the University would strengthen its overall position with the electorate, its legislative and executive representatives, and the education profession.

We are also convinced that the University support currently provided for outreach, student preparation and recruitment activities could generate more imaginative and effective programs than those currently in place. While it is extremely important for the University to ensure the quality and diversity of its student pool, it is debatable whether this goal can be best achieved through direct service to individual students or through school improvement projects of a more general nature. Rather than assigning funds to existing projects on a routine basis, we recommend a more open-ended process in which competition between projects of quite different design could be encouraged. In the long run, careful assessment of a range of dissimilar service projects trying to achieve the same effects would be much more valuable to the University than the routine administration of similar service projects now in place.

In addition to funds currently available for University outreach activities for students, we also recommend allocation of funds for outreach to school teachers. These funds should also be awarded on a competitive basis to projects designed to achieve identifiable results.

The integration of service projects of this sort -- for both students and teachers -- with University scholarship should be explicitly encouraged by the University administration, both through special funding for relevant faculty research and through affirmation of its value to the improvement of formal schooling. We believe that we are making progress towards this difficult objective within the School of Education at Berkeley, largely through an exercise of will and the imaginative use of quite limited resources. Given the progress we have made so far, the prospect of adequate support is extremely attractive. What we find extremely attractive is also absolutely essential.

RESOURCES FOR EXCELLENCE

The Graduate School of Education at Berkeley cannot achieve the missions and objectives we have set for ourselves, objectives essential to contributing fully to the University's priority missions in the field of education, with our current resource base. We are too resource-poor -- in faculty, budget and moral support and commitment from the University. The School of Education at Berkeley has at present only 34.5 Senate FTE faculty members (out of 40.5 authorized positions) -- fewer faculty members than any other major graduate school of education, including those at UCLA and Stanford University. With so few individuals, we cannot conduct those academic programs, research and services which will contribute most to reforming and improving public education in California and the U.S.

In 1976, The Cheit Report (p. VII-4) warned: "the main danger for the programs [of education] is slow death by stages of retrenchment." Eight years later, we have seen the effects of policies of retrenchment in our inability to maintain a faculty of critical mass in programs such as mathematics and science education, in declining state financing for programs of education and in the University's general neglect of essential programs and services for the education profession.

We recognize the resource constraints on the University and the State, given many competing demands for funding. Our objectives are consistent with the principle of concentration of resources in a limited number of programs and services of highest priority. But the University must allocate additional resources -- albeit only modest increases -- to the highest priority programs in education.

We are developing a vision of what the Graduate School of Education should look like in five years, 1988-89, and the resources and other changes necessary to implement this vision, in order to attain the five top objectives noted at the outset (p. 5 and 6 above). This vision is an adventurous one, but we believe it is realistic. It calls for us to increase our Senate faculty FTE to 50.5 in the next five years and to make major revisions in our academic programs and curricula, professional services and research emphases. The major changes and required resources will be these:

1) A center of excellence in mathematics, science and technology education. To undertake the doctoral training, teacher training, research, and affiliated professional services for this center requires a strong faculty base. At present we have only two Senate faculty members in this area, although we have been authorized to hire six more by 1985-86, bringing the number to eight. To build programs that can provide national leadership in this area requires that we hire four additional faculty members by 1988-89. If approval is granted, we anticipate that these ten new faculty members would be in the following areas:

3 - Mathematics
3 - Physical sciences (physics and chemistry)
2 - Computer science/artificial intelligence
2 - Cognitive science in education

(Table 6 lists current and projected faculty members for each program.) To shape these mathematics, science and technology education programs into a major national research, teaching and dissemination center, we will work to expand the number of faculty members from the campus's other departments who are affiliated with these programs.

2) Programs in language and literacy education, educational administration and evaluation, and educational psychology. These programs, together with those in mathematics, science and technology education, will be the School's core academic programs. They must be maintained and, where insufficient numbers of faculty exist, strengthened. Of these areas, the most critical shortages are in language and literacy education. Earlier, we recommended that the University establish a center of excellence in this area at the UCLA campus. Nevertheless, because language skills and comprehension are basic to all other learning, we need to strengthen this area at the Berkeley campus. To reinforce the contributions that language experts can make to mathematics and science learning and the contributions that technology can make to language and literacy, we hope to recruit individuals with the interest and expertise to work closely with faculty

in mathematics, science and technology education. Within the next five years, we will request three new positions in language and literacy education as follows:

2 - psycho/sociolinguistics
1 - literacy studies (written language comprehension and production)

The educational administration and evaluation division has lost a number of faculty members to retirement in recent years and will lose at least two and possibly more in the next five years -- including the one remaining faculty member in the higher education area. We emphasized earlier our belief that higher education study should be revitalized through a joint program Berkeley, Davis and San Francisco State University. In order to contribute our share of resources to this program, the School of Education should have at least three faculty members, preferably faculty whose expertise is applied to both postsecondary and secondary school systems, as follows:

1 - community college administration/educational finance and budgeting
2 - general higher education/policy analysis

In educational psychology, we expect at least two faculty retirements in the next five years -- one in quantitative methods and one in special education. Our high demand and successful program in school psychology is currently staffed by one Senate faculty member. We hope to recruit three faculty members in educational psychology, as follows:

1 - quantitative methods
1 - special education
1 - school psychology

Finally, we hope to recruit one faculty member in the area of philosophical and humanistic foundations of education. Although we have phased out the doctoral program in this area, all students in Education require understanding of logic in inquiry, the role of values in education and the concept of meaning in learning. Our sole Senate faculty member in this area will be retiring. We hope to replace this faculty member with an individual who will bring questions of values and broad social and public policy considerations to bear on the study of education and who can integrate quantitative and humanistic approaches in education.

3) Experimental programs in teacher education. Our greatest need in teacher education is for the University to lend the full weight of its prestige and authority to (a) asserting the importance of teaching in our society and of teacher training in the University, (b) revising credentialing regulations which now inhibit experimental programs and (c) promoting the development of well designed experimental teacher training programs on the campuses. We require only one additional Senate faculty member in the area of teacher education, since we are committed to integrating teacher education programs more fully into the rest of the School. This individual will be expected to take a leadership role in conducting research on teachers, teaching and teacher education and in developing innovative and exemplary teacher training programs, in close conjunction with other Senate faculty and Supervisors of Teacher Education. This individual will be affiliated with the appropriate division or divisions in the School, depending on his or her field of interest. Moreover, all Senate faculty members will be expected to participate in teacher education or other credential programs through teaching, coordination, advising or other activities, and interest in teacher education will be a criterion in the recruitment of new faculty members. We will also require some additional Supervisors of Teacher Education and short-term employment of expert school teachers to act as consultants to our teacher education programs and to help bridge the gap between the University and the schools.

4) Redesigned advanced professional training. The School of Education at Berkeley seeks to assume leadership in designing Ed.D. programs which do not mimic Ph.D. programs but truly serve the needs of advanced education professionals. We are planning innovative Ed.D. programs which provide breadth of learning, integrate field experience and "real" problems with academic program components and focus on more appropriate mechanisms to develop and demonstrate competency. Creating such programs will require major changes in attitude by the campus and our own faculty and therefore will not be easy. As in teacher education, our greatest need is for University and campus support of professional education -- as evidenced in funding for Education and in faculty appointment and promotion decisions which recognize the individual's contribution to professional training and knowledge and to improvement of the field.

5) New and revised services to the field. We have undertaken a number of major new initiatives for service to the field and a thorough review and revision of current service activities. Our efforts are focused on services which complement the academic functions of the School and which enhance the ability of the schools to reform their own institutions. To succeed in these efforts, we must have more ongoing administrative support to develop, coordinate and evaluate service programs. We require at least one full-time permanent professional staff person to handle these functions as well as increased support staff. We must have campus policies which reward faculty participation in professional service, in order to expand the participation of our own faculty members in these activities. We must formalize provisions for appointing school personnel to work on a part-time, temporary basis in the University. Finally, and as always, we must have the moral support and political commitment of the University and the campus on behalf of efforts to assist and upgrade the public schools and the education profession.

In the past, Graduate the School of Education at Berkeley was criticized for drifting without apparent purpose, for fragmentation of programs and for failure either to integrate itself well with the rest of the campus or to form effective linkages with the profession. These criticisms were not fully justified -- but neither were they without merit. Now, however, we have a strong sense of purpose and renewed faculty dedication and enthusiasm for rebuilding the School. If we receive a like commitment from the University and the campus for strengthening the study and practice of education, we can build at Berkeley and within the University of California a major instrument for national leadership and reform of education.

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TABLE 1

AVERAGE SAT SCORES OF NATIONAL AND CALIFORNIA COLLEGE BOUND SENIORS: 1975-1976 to 1981-1982

NATIONAL	1975 -76	1976 -77	1977 -78	1978 -79	1979 -80	1980 -81	1981 -82	1982 -83
All Students								
Math	472	470	468	467	466	466	467	468
Verbal	431	429	429	427	424	424	426	425
Education Students*								
Math	431	426	422	420	418	418	419	418
Verbal	405	400	396	392	389	391	394	394
CALIFORNIA								
All Students								
Math	480	477	466	473	472	475	474	474
Verbal	438	433	427	428	424	426	425	421
Education Students*								
Math	NA	NA	423	427	422	424	424	421
Verbal	NA	NA	400	399	395	397	399	397

* Students who state that they intend to major in Education. Not all students who major in Education at the undergraduate or graduate level will have stated this as their intention as high school seniors.

Source: Admissions Testing Program of the College Board

TABLE 2
STATEWIDE DISTRIBUTION OF PUPILS, K-12, BY RACIAL AND ETHNIC GROUP, SCHOOL YEARS 1967-1968 to 1981-1982

SCHOOL YEAR	AMERICAN INDIAN OR ALASKAN NATIVE	ASIAN OR PACIFIC ISLANDER	FILIPINO	NON HISPANIC		HISPANIC	TOTAL
				BLACK	WHITE		
1967-68	13,195	91,455	30,141	372,150	3,308,828	616,226	4,431,995
	0.3%	2.1%	0.7%	8.4%	74.7%	13.9%	100.0%
1969-70	15,663	96,845	--	404,272	3,358,397	684,432	4,559,609
	0.3%	2.1%		8.9%	73,7%	15.0%	100.0%
1971-72	19,319	97,978	49,704	422,945	3,230,106	725,227	4,545,279
	0.4%	2.2%	1.1%	9.3%	71,1%	16.0%	100.0%
1973-74	22,316	133,430	--	432,418	3,088,758	765,419	4,442,341
	0.5%	3.0%		9.7%	69.5%	17.2%	100.0%
1977-78	38,799	149,132	51,899	430,367	2,722,995	892,113	4,285,305
	0.9%	3.5%	1.2%	10.0%	63.5%	20.8%	100.0%
1979-80	37,294	172,956	57,917	405,938	2,440,620	953,295	4,068,020
	0.9%	4.3%	1.4%	10.0%	60.0%	23.4%	100.0%
1981-82	32,647	221,899	64,425	399,171	2,282,828	1,045,186	4,046,156
	0.8%	5.5%	1.6%	9.9%	56.4%	25.8%	100.0%

Source: California Postsecondary Education Commission

TABLE 3
ENROLLMENT IN CALIFORNIA PUBLIC SCHOOLS BY GRADE LEVEL AND BY RACIAL OR ETHNIC GROUP, 1981-1982

	ENROLLMENT, BY RACIAL OR ETHNIC GROUP, AND PERCENT OF TOTAL						
					NOT HISPANIC		
GRADE LEVEL	AMERICAN INDIAN OR ALASKAN NATIVE	ASIAN OR PACIFIC ISLANDER	FILIPINO	HISPANIC	BLACK	WHITE	TOTAL
STATE TOTALS	32,647	221,899	64,425	1,045,186	399,171	2,282,828	4,046,156
	0.8%	5.5%	1.6%	25.8%	9.9%	56.4%	100.0%
K	1,595	15,345	5,226	102,409	27,195	148,469	300,239
	0.5%	5.1%	1.7%	34.1%	9.1%	49.5%	100.0%
1	1,815	16,353	4,812	98,848	28,854	147,659	298,341
	0.6%	5.5%	1.6%	33.1%	9.7%	49.5%	100.0%
2	1,857	16,481	4,904	90,778	27,750	145,882	287,652
	0.7%	5.7%	1.7%	31.6%	9.7%	50.7%	100.0%
3	2,069	16,771	5,120	85,916	27,159	145,429	282,464
	0.7%	5.9%	1.8%	30.4%	9.6%	51.5%	100.0%
4	2,411	17,122	5,225	82,728	27,911	154,926	290,323
	0.8%	5.9%	1.8%	28.5%	9.6%	53.4%	100.0%
5	2,621	17,262	5,345	82,280	30,210	173,156	310,874
	0.8%	5.6%	1.7%	26.5%	9.7%	55.7%	100.0%
6	2,684	17,459	5,232	79,430	31,863	187,656	324,324
	0.8%	5.4%	1.6%	24.5%	9.8%	57.9%	100.0%
7	2,856	16,457	4,741	76,808	32,595	188,807	322,264
	0.9%	5.1%	1.5%	23.8%	10.1%	58.6%	100.0%
8	2,791	15,794	4,734	71,454	30,511	182,145	307,429
	0.9%	5.1%	1.5%	23.2%	9.9%	59.3%	100.0%
NG	307	1,127	488	12,356	5,867	25,733	45,878
	0.7%	2.5%	1.1%	26.9%	12.8%	56.1%	100.0%
9	3,001	17,365	4,862	74,949	33,173	192,793	326,143
	0.9%	5.3%	1.5%	23.0%	10.2%	59.1%	100.0%
10	3,117	19,651	4,928	73,960	35,782	196,849	334,287
	0.9%	5.9%	1.5%	22.4%	10.7%	58.9%	100.0%
11	2,924	18,124	4,615	59,833	31,547	194,475	311,518
	0.9%	5.8%	1.5%	19.2%	10.1%	62.4%	100.0%
12	2,410	15,569	3,999	47,575	25,702	185,563	280,818
	0.9%	5.4%	1.4%	16.9%	9.2%	66.1%	100.0%
NG	189	1,019	194	5,862	3,052	13,286	23,602
	0.8%	4.3%	0.8%	24.8%	12.9%	56.3%	100.0%

NOTE: Totals may not add up to 100 percent because of rounding.

SOURCE: California Postsecondary Education Committee

TABLE 4

COMPARISON

MEAN GRE SCORES OF STUDENTS ADMITTED TO THE BERKELEY CAMPUS, BY SELECTED DEPARTMENTS, FALL 1981 AND FAll 1982

	FALL 1981				FALL 1982			
		MEAN GRE				MEAN GRE		
DEPARTMENT	N	VERBAL	QUANT	V&Q	N	VERBAL	QUANT	V&Q
Education*	117	599	560	1159	54	621	578	1199
City & Regional Planning	73	627	591	1218	45	605	597	1202
Library	97	630	526	1156	96	640	545	1185
Psychology	38	652	656	1308	30	627	604	1231
Public Health	161	562	546	1108	133	551	548	1099
Public Policy	53	638	670	1308	55	666	685	1351
Social Welfare	128	558	487	1045	124	538	490	1029
Campus	2828	614	646	1260	2624	617	656	1273

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* For Education, data include both doctoral and non-doctoral students (Masters and some credential students) admitted to the department.

TABLE 5
PROGRAMS AND STUDENTS IN THE SCHOOL OF EDUCATION: 1983-1984 ACADEMIC YEAR

	PH.D.[a]	ED.D.[b]	MA	MAT	MA/ ADV CRED[c]	MA/ BASIC CRED[d]	ADV CRED	BASIC CRED	TOTAL
Education in Mathematics, Science, and Technology									
Mathematics, Science, and Technology Education	12	7	4						23
Educational Research and its Applications									
Multiple Subject						15			15
Single Subject						17			17
									55
Education in Language and Literacy									
Language, Reading and Writing	18	4	1						23
Advanced Reading and Language Leadership Program			2		9				11
Writing Specialist			3						3
English				5					5
Comparative Literature				0					0
Bay Area Writing Project Credential Program								27	27
									69
Educational Psychology									
Human Development	23								23
Quantitative Methods	13								13
School Psychology[e]	46								46
California Re-Education Training						2			2
Developmental Teacher Education					6	14			20
									104

TABLE 5 (continued)
PROGRAMS AND STUDENTS IN THE SCHOOL OF EDUCATION:
1983-1984 ACADEMIC YEAR (continued)

	PH.D.[a]	ED.D.[b]	MA	MAT	MA/ ADV CRED[c]	MA/ BASIC CRED[d]	ADV CRED	BASIC CRED	TOTAL
Educational Administration and Evaluation									
Education Administration	18	8	2						28
Policy Analysis	15								15
Program Evaluation	3	2							5
Higher Education[f]	18	2							20
Administrative Services			1		2		4		7
									75
Educational Foundation									
Anthropology, Sociology[f] and Adult Education	9		1						10
History and Philosophy[f] of Education	10								10
Counseling Psychology[f]	44	1							45
									65
Other									
Physical Education[f] (Joint Program)	1								1
Non Divisional	1								1
									2
TOTAL	231	24	14	5	17	48	4	27	370

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[a] Includes MA/Ph.D. students and Ph.D. students concurrently enrolled for a credential.

[b] Incudes MA/Ed.D. students and Ed.D. students concurrently enrolled for a credential

[c] Advanced credentials offered by the School (exclusive of the School of Psychology Authorization, which is limited to Ph.D. candidates) include Administrative Services, Reading Specialist, Learning Handicapped Specialist and Severely Handicapped Specialist.

[d] The two basic credentials are the Multiple Subject Credential (for elementary school teaching) and the Single Subject Credential (for secondary school teaching).

[e] About two-thirds of students in the School Psychology program are concurrently seeking a professional School Psychology Authorization.

[f] Program is being phased out.

TABLE 6
CURRENT AND PROJECTED SENATE FACULTY MEMBERS IN THE SCHOOL OF EDUCATION AT BERKELEY
1983-1984 to 1988-1989

	SENATE FACULTY FTE			
DIVISION/PROGRAM	1983-84	1984-85	1985-86	1988-89
Education in Mathematics, Science and Technology				
Mathematics	0[a]	1	2	3
Physical Sciences	0[b]	0	1	3
Computer Science/ Artificial Intelligence	0[c]	1	2	2
Cognitive Science	0	1	1	2
Science Education	2	2	2	2
	2	5	8	12
Education in Language and Literacy				
Literacy Studies	2.75	2.75	2.75	3.75
Psycho/Sociolinguistics	2.25[d]	2.25	3.25	4.25
Bay Area Writing Project	1	1	1	1
	6	6	7	9
Educational Psychology				
Human Development	5	5	5	5
Quantitative Methods	2	2	1	2
School Psychology	1	1	1	2
Special Education/ California Re-Education	1[e]	1	1	1
	9	9	8	10
Educational Administration and Evaluation				
Education Administration; Policy Analysis	5[f]	5	5	8.5
Higher Education	1[g]	1	0.5	
Program Evaluation	2	2	4[h]	3
	8	8	9.5	11.5

TABLE 6 (continued)
CURRENT AND PROJECTED SENATE FACULTY MEMBERS
IN THE SCHOOL OF EDUCATION AT BERKELEY
1983-1984 to 1988-1989 (continued)

	SENATE FACULTY FTE				
DIVISION/PROGRAM	1983-84	1984-85	1985-86		1988-89
Educational Foundations (Group)				*	
History and Philosophy of Education	2.5	2.5	2.5	*	3
Anthropology, Sociology, Adult Education	3	3	1[h]	*	1
Counseling Psychology	2	2	1.5	*	0
	7.5	7.5	7.0	*	4
[Teacher Education]	0	0	0	*	1[i]
Unaffiliated Faculty	2	2	2	*	3
TOTAL SENATE FACULTY	34.5	37.5	41.5	*	50.5

a In addition, Leon Henkin (Mathematics) is an affiliated faculty member

b Robert Karplus (Physics), Frederick Reif (Physics), and Glenn Seaborg (Chemistry) are affiliated faculty members

c Richard White (Electrical Engineering and Computer Science) is an affiliated faculty member. Dean Bernard Gifford is on administrative assignment.

d Wallace Chafe (Linguistics), Robin Lakoff (Linguistics), and John Ogbu (Anthropology) are affiliated faculty members

e Reginald Jones (Afro-American Studies) is an affiliated faculty member.

f Dean Bernard Gifford (not included) is on administrative assignment.

g President David Gardner (Education) is an affiliated faculty member.

h It is expected that two faculty members now in the sociology or anthropology of education programs will transfer to program evaluation.

i This individual will be affiliated with the appropriate division or divisions in the School, depending on the field in his or her expertise in teacher education is focused.

TABLE 7

GRANTS AND CONTRACTS ADMINISTERED THROUGH THE SCHOOL OF EDUCATION[a]

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	AWARD AMOUNT	OTHER FACULTY SUPPORTED	GRADUATE STUDENT SUPPORT[b]
Ammon, P.	(Gift: for research in the areas of language, thought and instruction.) 8/77 - Indefinite	Private Roblee F.	$ 11,500	-	1
Benson, C.	Equity and Effectiveness in California Vocational Education 7/83 - 6/84	University Ca. Pol. Sem	$ 25,000	Stern, D.	1
Bower, E.M.	Training Personnel for Emotionally Disturbed Children in Day and Residential Schools (Cal Re-Ed) 7/83 - 6/84	State SDE	$ 50,000	-	4
Fillmore, L.	Learning Languge Through Bilingual Education 9/80 - 9/83 (carry funds forward)	Federal NIE	$531,819	-	4
Freedman, S.	The Role of Response in the Acquisition of Written Language 10/83 - 9/84	Federal NIE	$ 69,032	-	2
Freedman, S.	Teaching and Learning in the Individual Writing Conference 4/82 - 11/83	Private NCTE	$ 6,500	-	1
Gifford, B.	Young Scholars Interested in the Study of Education 1/84 - 12/86	Private Spencer	$150,000	-	-

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a This includes most but not all funds administered through the School.

b Head count only.

TABLE 7 (continued)

GRANTS AND CONTRACTS ADMINISTERED THROUGH THE SCHOOL OF EDUCATION[a]

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	AWARD AMOUNT	OTHER FACULTY SUPPORTED	GRADUATE STUDENT SUPPORT[b]
Gifford, B.	Initiatives in Math and Science Education 12/83 - 2/84	Private Hewlett	$ 10,000	-	-
Gifford, B.	Video Skills and Spatial-Visual Skill Development in Pre-Adolescent Girls 7/83 - 6/84	Private Atari	$ 10,270	-	-
Gifford, B./ Rohwer, W.	UCB Gifted Program	Self-supporting	$141,000	-	-
Guthrie, J.	Policy Anlysis for California Education 11/83 - 4/85	Private Hewlett F.	$300,000	-	2
Lambert, N.	School Psychology Training 7/82 - 3/84 (carry forward of funds)	Federal NIMH	$ 60,350	-	4
Lambert, N.	Training in the Prevention of Mental Disorders 9/83 - 6/84	Federal NIMH	$ 45,070	-	6
Lambert, N.	Substance, Use and Abuse in Hyperactive Children 4/83 - 3/84	Federal NIMH	$131,916	Sandoval, J. (Davis)	4
Lambert, N.	Adolescent Outcomes for Hyperactive Children 9/83 - 8/84	Federal	$150,796	-	5
Lowery, L.	Bay Area Mathematics Project 4/83 - 6/84	State system-wide	$116,536	Henkin, L.	-

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[a] This includes most but not all funds administered through the School.

[b] Head count only.

TABLE 7 (continued)

GRANTS AND CONTRACTS ADMINISTERED THROUGH THE SCHOOL OF EDUCATION[a]

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	AWARD AMOUNT	OTHER FACULTY SUPPORTED	GRADUATE STUDENT SUPPORT[b]
Reed, R.	Summer Institute for School Administrators Indefinite	Self-supporting	$ 15,542	-	5
Reif, F.	Cognitive Principles for Instructional Design 8/83 - 9/84	Federal Office Naval Research	$ 79,535	-	1
Simons/Ammon	The Language of Beginning Reading Text 1/84 - 6/85	Private NCTE	$ 4,952	-	1
Stern, D.	Increase Success in High School and Beyond 7/83 - 6/84	University Ca. Pol. Sem	$ 50,000	Catteral (UCLA)	2
Stern, D.	Learning Enterprise Handbook and Policy paper on Energy Education in California Schools 12/82 - Indefinite	Private Pioneer Fund	$ 4,000	-	-
Stern, D.	Energy Education - Summer Institute 5/82 - Indefinite	Private PGE/Chevron	$ 7,400	-	-

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[a] This includes most but not all funds administered through the School.

[b] Head count only.

TABLE 7 (continued)

OTHER GRANTS AND CONTRACTS RECEIVED BY FACULTY IN THE SCHOOL OF EDUCATION[c]

PRINCIPAL INVESTIGATOR	TITLE OF PROJECT	FUNDING SOURCE	AWARD AMOUNT	OTHER FACULTY SUPPORTED	GRADUATE STUDENT SUPPORT[b]
Gray, J.	Bay Area Writing Project	State Federal (NEH) and Private (Carnegie)	$1,147,860	-	-
Jensen, A.	Speed of Information Processing and Psychometric Intelligence	Private (Institute for Study and Education Differences)	$ 50,617 (cur. bal.)	-	1
Rohwer, W.	Changes in the Study-Achievement Relationship during Adolescence (administered by Far West Regional Labs)	Federal NICHHD	$ 313,452 (direct costs only)	-	-
Turiel, E.	Judgements and Action in Practical Social Situations 1983 - 1986 (administered by Institute of Human Development)	Federal NIMH	$ 302,452	-	5

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[b] Head count only.

[c] Not a complete list of funded faculty research projects.

APPENDIX

November 7, 1983

To: Doris H. Calloway, Provost
Professional Schools and Colleges

From: Bernard R. Gifford, Dean BRG/
Graduate School of Education

Re: Reviews of School of Education Faculty Personnel:
Procedures, Criteria, and Evidence

The purpose of this memorandum is to share with you and the Committee on Budget and Interdepartmental Relations the procedures and criteria the School will be using in evaluating the accomplishments and achievements of faculty eligible for promotions and merit increases during the current academic year (1983-84). The criteria are by no means original; they were derived by interpreting the criteria for appointment and advancement outlined in the Academic Personnel Manual in terms specifically applicable to faculty in the School. Furthermore, we have explicitly identified, for each of the criteria, the kinds of evidence that are relevant and the relative weights to be given them. As we put these criteria and procedures into use, we anticipate we will uncover problems and errors. Therefore, all of us in the School, especially members of the Personnel Committee, welcome your comments on our attempt to rationalize the School's personnel policies and practices.

Procedures

In the past, a Personnel Committee has customarily acted in an advisory capacity to the Dean and Department Chair in cases of merit increase and to School faculty in cases of promotion. It has also been customary for this Committee to appoint ad hoc committees to provide written reports that analyze and evaluate the qualifications of candidates and that conclude with a recommendation regarding advancement. Upon receipt and after discussion of such reports, the practice of the Personnel Committee was to vote on the recommendations made, and to transmit to the Dean and Department Chair the results of this vote along with the report of the ad hoc committee.

On September 28, 1983, the faculty of the School met, discussed these procedures, and voted unanimously to modify them. In making these modifications, the intent of the faculty was to achieve two goals. The first goal is that of developing among all members of the faculty, beginning with the members of the Personnel Committee, a common understanding of the criteria for advancement. Until this goal is achieved, we believe that the practice of assigning responsibility for evaluative reports to ad hoc committees independent of the Personnel Committee would continue to result in inconsistent applications of the advancement criteria. The second goal is to promote a uniformly high level of quality in these evaluative reports by lodging control over them in the Personnel Committee itself rather than dispersing this control across disparate *ad hoc* committees.

In our modified procedures, the Personnel Committee continues to act in an advisory capacity to the Dean and to the faculty. In contrast to previous practice, however, the voting members of this Committee themselves develop and write analytic reports on the qualifications of candidates for advancement. The initial version of such a report is formulated and drafted by two or three members of the Committee acting as a subcommittee, but the final report is a product of the Committee as a whole, with provision for dissenting judgments as necessary.

Criteria and Evidence

The interpretation of the University criteria in terms germane to the work of faculty in the School of Education must conform with the principal objectives of the School. The School has four such objectives.

1. The preparation of persons for positions of influence in the profession of education.

2. The preparation of scholars for teaching or research positions in colleges and universities, educational or policy research organizations, governmental agencies, foundations and industry.

3. The advancement and dissemination of knowledge concerning educational (especially precollegiate) policies, processes, practices and problems that are amenable to scholarly analysis and research, both basic and applied.

4. The use of such knowledge in effecting improvements in educational policy and practice, principally in the schools but in other settings as well.

While no member of the School faculty is expected, as an individual, to make equivalently distinguished contributions toward all of these objectives, the faculty collectively must possess at least four capabilities, those of: (a) orienting the methods and theories of allied disciplines (e.g., anthropology, computer science, history, law, linguistics, physics, philosophy, political science, psychology, sociology, statistics, etc.) toward the analysis of educational phenomena, (b) bringing these disparate lines of inquiry into joint focus on such phenomena, (c) contributing to or serving as a catalyst for advances in knowledge in the allied disciplines, (d) conducting scholarly work that ranges continuously along a dimension from basic research to applied professional contributions.

APPENDIX

As individuals, members of the faculty will differ with reference to these capabilities. They will vary in the degree of their primary identification with a basic discipline, in the proportion of their effort devoted to linking such a discipline with educational practice, and in the position of their work on the basic-to-applied dimension. Nevertheless, (a) however basic the research of a faculty member, it should have direct or potential applications in the practice of the professions of education, and (b) however applied the professional work of a faculty member, it should be manifestly informed by his or her expertness in at least one of the basic disciplines. Moreover, every member of the faculty is expected to achieve excellence in the kind of work he or she most emphasizes, whichever of the capabilities these emphases represent. The central contributions of each faculty member, then, are expected to be truly distinguished.

The preceding objectives and expected capabilities determine the identity of the School of Education as a professional school. They also furnish direction and constraint for the interpretation of the University criteria for faculty evaluation. These criteria pertain to performance in teaching, research and creative work, professional competence and activity, and University and public service.

Teaching

One of the central pedagogical aims of the School, in keeping with its objectives and the expected capabilities of the faculty, is that of fostering student progress in using basic disciplines to analyze and investigate educational phenomena, and to improve educational policy and practice. The targets of instruction, then, must be specific educational phenomena, their sources, or their contexts. In turn, quality teaching in the School should include explicit demonstrations of the uses of the basic disciplines to analyze or resolve educational problems, and the facilitation of such uses by students. Evidence about these attributes of teaching, as for other important attributes, can be gained from the examination of course materials, colleague observations, and student descriptions.

While the preceding aim should be a common factor in teaching across the School, faculty provide instruction for a variety of student populations in a variety of programs. These varieties include campus undergraduates outside the School, candidates for teaching and other professional credentials, graduate students in M.A. programs, and graduate students in Ed.D. and Ph.D. programs. The skills and attributes that make for effective teaching can vary substantially across these populations and programs. Judgments of teaching quality, therefore, must also vary and be based on evidence of the character of performance in a number of activities. These performance activities and the evidence to be used in evaluating their quality are shown in Table 1.

APPENDIX

Table 1

Teaching Activities and Evaluative Evidence

Activity	Evidence
Classroom instruction	Number of courses taught and their enrollments, Colleague observations, Opinions of students, Course materials.
Advising	Number of advisees, Letters from current and former advisees, Colleague comments.
Examination guidance	Number of students advanced to candidacy, Opinions of advisees.
Research guidance and support	Number of students completing advanced degrees, Number of students supported on research or training projects, Proportions of students' dissertations published, Prizes for dissertations of students, Opinions of current and former students.
Involvement in professional training	Self-reports, Colleague observations.
Instructional improvement and innovation	Self-reports, Course materials, Student opinions, Collaborator observations, Instructional improvement grants.

Research and Creative Work

Variety also typifies the research and creative work of the faculty in the School. Reflecting the range of capabilities expected of this faculty, the major varieties of such work can be characterized as follows. (a) One variety, basic research, should have two hallmarks. It should make an acknowledged contribution to the advancement of a discipline, and it should yield knowledge that illuminates educational phenomena or contributes to the solution of educational problems. (b) A second variety is applied research. Such research should follow clearly from the implications of theory or methods in one or more disciplines, and be acknowledged as a decisive contribution to the resolution of educational issues or problems. (c) A third variety, professional applications, is work that contributes to progressive change in the policies or practices of the professions of education. Such work should stem from a rationale that is recognizably informed by scholarly research, theory, or methods, or should incorporate innovations that result in documentable and significant differences in professional conceptions, approaches, policies, or practices. Work of this variety may itself be of various forms, including the development of new curricula or instructional methods, reports of conceptual or data analyses that provide novel perspectives on policy or practice, commissioned reports of the evaluation of specific educational programs or of procedures for solving specific educational problems, critical reviews of current policy and practice, and analyses of recent advances in one or more disciplines with respect to their implications for educational policy or practice.

Because of the multi-faceted nature of educational phenomena, some of the preceding varieties of work may frequently involve the collaboration of experts in different disciplines. Such collaboration is especially fitting in the School due to the multidisciplinary character of its faculty and should, therefore, be credited. The allocation of this credit will be determined by verifying the proportional contributions of individuals to joint projects.

Just as the character of research and creative work in education can vary widely, so can the kinds of evidence to be examined in evaluating the quality of such work. The principal instances of these kinds of evidence are shown in Table 2 for each of the preceding varieties of work.

Table 2

Varieties of Research and Creative Work
and Corresponding Instances of Evidence

Variety of Work	Instance of Evidence
Basic research	Articles published in refereed journals, Chapters published by invitation in edited books or periodical volumes, Published books or monographs and published critical reviews of these, Research grant or contract applications approved by agencies through peer review, Reports printed by sponsoring agencies, Frequencies of citations by others in published citation indexes, Judgments of external peers.
Applied research	All of the preceding instances.

Professional Applications	Published or printed curricular and instructional materials, Articles published in journals or other periodicals for professional educators, Textbooks for the education of professional educators, Reports issued by professional organizations, legislative bodies, governmental agencies, foundations, or private firms, Invited addresses or testimony before such bodies, Judgments of education professionals.

Many of the instances of evidence listed in Table 2 evolve through a number of preliminary versions to a final form. Such preliminary versions (e.g. prepublication manuscripts, preprinted articles or reports) will be treated during the review of a candidate for advancement as evidence of work in progress. These preliminary instances, then, have importance in forming judgments about the continuing productivity of a candidate. Except in extraordinary circumstances, however, prefinal versions of evidence of research or creative work will be insufficient to justify advancement. Instead, recommendations for promotions or merit increases will be based principally on the quality and impact of work that has been completed and published or printed in its final form.

Judgments of quality and impact may be especially difficult to make in the case of some types of evidence in the domain of professional applications. A major source of such ambiguity is that instances of evidence in this domain often bear no evident mark that they have received and survived critical peer review or some analogue of this evaluation process. In such cases, the candidate has the responsibility for specifying the standards that the work has met and the indicators that validate this claim. A written record of testimony before a legislative body, for example, should be augmented by evidence that this testimony substantially affected the decisions of the recipients.

Professional Competence and Activity

For faculty members in the School of Education, professional competence can be established and professional activity can occur in at least two arenas. One of these is the arena of peers in their own fields, while the other is the arena populated by those in other education professions.

In the arena of peers, professional competence is attested by a number of indicators. These indicators include membership on the editorial boards of scholarly or professional journals, holding office in scholarly or professional organizations, honors conferred by or invitations to address meetings of such groups, invited participation in conferences on specialized topics in the field, and membership in especially selective and honorific societies such as the National Academy of Science or the National Academy of Education. Professional activity in this arena can also take a number of forms. One such form is that of the presentation of papers at meetings of scholarly or professional organizations. Another is service to such organizations on committees or in program organization.

Some of these same indicators can be relevant in the case of the second arena, that of professional educators outside a faculty member's own special field. Other indicators, however, are specific to this arena. These include consultantships and contracts for service to local, state, and federal education agencies, legislators, other policy makers, and professional associations. They also include informational circulars, pamphlets or workshops designed to assist school personnel to improve their skills or to implement policy options and mandates. Close contact and working relationships with those in other education professions can be especially valuable to faculty members in the School. These contacts, for example, may inform the faculty member's training of students in the University as well as the choice of educational phenomena as targets for analysis and research.

While of substantial importance, professional competence and activity in either or both of these arenas are regarded as subsidiary to and not substitutes for accomplishments of quality in teaching and in research or creative work. When professional activity results in products subject to critical evaluation, they themselves will be regarded as evidence of creative work and be subjected to review against the criteria stated in the preceding section.

University and Public Service

Faculty in the School of Education, like faculty in other University units are expected to share in the responsibilities of policy formulation and administration. Contributions of special distinction beyond this normal expectation, whether in faculty governance or administration will be accorded due recognition. Similarly, distinguished service beyond the University, to the local community, the state, nationally, and internationally, will also earn recognition. It is especially appropriate for faculty members of the School of Education to contribute their skills to the solution of educational problems at all of these levels. Despite their importance, however, service activities by themselves cannot replace distinguished achievement in teaching and research or creative work.